direction 232°

begins at A-1 of small mammal grid ends at well.

83.C.10.2.2-1

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 1 Vegetation Type Greasewood / Sage Location begins S30 T1S R98W ends S25 T1S R99W

Date 20 June '75 Time, Ground Temp. at Start 1000 69° Time, Ground Temp. at End 1025 67°

Cloud Cover (%) 90% Wind Speed 0-5 Observer(s) Turner, Baker Project 83

RDM 7/21

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
No herptiles observed					

*Reproductive condition, broken tail, etc.

RBOSP PROGRESS REPORT

ECI

SHOUT
SHARE
IT

egins near station H-13 of sm. mammal grid
nds just below prominant out crops

83.C.10.2.2-2

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Location begins T 1S, R 99W, S 33 SW of NE

Transect # 2 Vegetation Type Pinyon-Juniper (South Slope) Location ends T1S, R99W, S 34 SE¼ of NW¼

Date 26 June 75 Time, Ground Temp. at Start 1130 68° Time, Ground Temp. at End 1300 72°

Cloud Covar (%) 0 Wind Speed 0-5 Observer(s) Sanz, Baker Project 83

ROM 7/21

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
S. graciosus	2.5 meters	on grnd. in sun	♀	Adult	~~capt~~ pregnant
S. grac	2 "	" " " "	♂	A	capt
S. grac.	1 meters	" " " "	?	A	obs.
" "	0 "	" " " "	♀	J.	capt.
" "	1.5 "	" " " "	?	J	obs
" "	2 "	" " " "	?	J	obs
" "	2 "	under shrub (shade)	♀	A	capt pres
" "	1 "	" "	♂	A	~~obs~~ capt
" "	1.5 "	on grnd in sun	?	A	obs

*Reproductive condition, broken tail, etc.

83.C ~~10.2.2-3~~

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 3 Vegetation Type Pinyon-Juniper (North Slope) Location begins T1S, R99W, S34 SE1/4 of SW1/4 ends T2S, R99W, S 4 NE1/4 of NE1/4

Date 26 June 75 Time, Ground Temp. at Start 1315 73° Time, Ground Temp. at End 1430 74

Cloud Cover (%) 0 Wind Speed 0-3 Observer(s) Baker, Sanz Project 83

should write out genus name 1st time

ROM 7/21 was this injected & collected

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
P. douglassi	4 meters	on grnd in sun	♂	A	capt.
S. graciosus	3 m.	" " " "	?	J	obs
"	2 m	under shrub	♀	A	preg.
S. grac	2.5 m	under shrub	♂	A	capt.

---

*Reproductive condition, broken tail, etc.

RBOSP PROGRESS REPORT ECI

Begins near drill pad
Ends at station M-3 of sm. mammal grid

P3.C.10.2.2-4

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 4 Vegetation Type Upland Sage Location begins T2S, R99W, S9, NE¼ of SW¼ end T2S, R99W, S8, SE¼ of SE¼

Date 26 June 7 Time, Ground Temp. at Start 1645 73° Time, Ground Temp. at End 1730 75°

Cloud Cover (%) 0 Wind Speed 0-10 Observer(s) Baker, Saur Project 83

RDm 7/21

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
P. douglassi	2.5 met.	on sand in sun	♀	J	capt

*Reproductive condition, broken tail, etc.

RBOSP PROGRESS REPORT

83.C.10-2.2-6

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 6-NP Vegetation Type Rocky South P-J/Sage Location NE S16 T1S R98W

Date 6/19/75 Time, Ground Temp. at Start 1450 63°F Time, Ground Temp. at End 1425, 70°F

Cloud Cover (%) 60% Wind Speed 5-10 Observer(s) Turner/Baker Project 83

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	rom 7/21 Additional Observations*
Sceloporus graciosus	2m	on ground in sun	♂	Ad	voucher - reprod coloration
S. graciosus	1.5m	" "	♂	ad	released - reprod color
S. graciosus	1 m	" "	♂	ad	obs
S. "	—	" "	?	ad	obs. not capt
S. "	1.5	on grd under sage	♀	ad	obs
Urosaurus ornatus	2	on rock in sun	♂	ad	voucher
U. ornatus	2	on grd in sun	?	Juv.	obs
S. graciosus	2	on grd in sun	♂	ad	capt
S grac	1	on grd in sun	?	Juv	obs
S. grac	—	" " " "	♂	ad	obs.
S. grac.	1	" " "	♀	ad	obs
S grac	2	" " " "	♀	Juv	obs
U. ornatus	1.5	on rock in sun	♂	ad	capt rel.
S grac	1.6	" grd in sun	?	ad	obs
S undulatus	5m	on grd in sun	♀	ad	obs — no voucher?
S. grac.	6m	on grnd in sun	♂	ad	capt
S. grac	0	" " "	♀	ad	obs
S. grac.	0	" " "	♂	ad	cap.
S grac	3m	" " "	♀	juv.	capt
U ornatus	2 m	on dead juniper	♂	ad	capt
S. grac.	3m	on grnd in sun	♂	ad	"
S undulat.	2 m	" " " "	?	juv	obs.

*Reproductive condition, broken tail, etc.

RBOSP PROGRESS REPORT

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3.C 10.2.2-12

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect #2-P Vegetation Type Pinyon-Juniper For.-B. Location thru sm. mam. la. grid

Date 16 Aug 75 Time, Ground Temp. at Start 1010 / 27°c Time, Ground Temp. at End 1118 / 29°c

Cloud Cover (%) 35 Wind Speed 0-5 Observer(s) SANZ / BAKER Project 23

RMn 8/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
eloporus graciosus	.5 meters	on grnd in sun	u	A	observed
S. graciosus	2 meters	" " " "	♀	A	capt.
S. graciosus	2 meters	" " " "	u	A	obs.
S. graciosus	1 "	" " " "	♀	A	capt
S. graciosus	2 "	" " in shade	♀	A	capt.
S. graciosus	0 "	" " " sun	♂	A	capt.
S. graciosus	1 "	" " " "	♀	A	capt.
S. graciosus	.5 "	" " " "	u	A	obs.
S. graciosus	.5 "	" " " "	♂	J	capt.

*Reproductive condition, broken tail, etc.

RBOSP PROGRESS REPORT

13.C 10.2.2-13

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 3P Vegetation Type PINYON-JUNIPER [illegible] Location thru sm. mammal large grid
Date [illegible] Time, Ground Temp. at Start 1158 / 25°F Time, Ground Temp. at End 1300 / 21°C
Cloud Cover (%) 5 Wind Speed 0-8 Observer(s) SANZ / BAKER Project 83

RAm 8/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
Sceloporus graciosus	2.5 meters	on grnd in sun	♀	A	capt.
S. grai	3 meters	on grnd in shade	♂	A	"
S. graciosus	3 "	running through bush	?	A	"
S graciosus	0 "	on grnd under dead fall	u	A	obs.
S. graciosus	3 "	on ground in sun	♂	A	capt.
S. graciosus	1 "	" " " "	♂	A	capt.
S. graciosus	0 "	" " " "	♀	A	capt.

*Reproductive condition, broken tail, etc.

RBOSP PROGRESS REPORT

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83.C.10.2.2-14

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 4-P Vegetation Type SAGEBRUSH Location thru sm. mound 1k. grid

Date 15 Aug 75 Time, Ground Temp. at Start 925 | 22.5°c Time, Ground Temp. at End 1105 | 20°C

Cloud Cover (%) 40 Wind Speed 2-5 mph Observer(s) SHNZ / BAKER Project 83

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
Phrynosoma douglassi	.3 m	on grnd in sun	u	J	
P. douglasi	1	" " " "	F ♀	A	

RBOSP PROGRESS REPORT

*Reproductive condition, broken tail, etc.

HERPETOFAUNA TRANSECT FIELD DATA SHEET begin - T1S, R99W, S 24, NE/NW

Transect # 11-n Vegetation Type [illegible] Location [illegible] - T1S, R99W S 23 SE/NE

Date 15 [illegible] 75 Time, Ground Temp. at Start 1335 / 26°C Time, Ground Temp. at End 1408 / 24°C

Cloud Cover (%) 85 Wind Speed 5-12 Observer(s) [illegible] Project 83

RBM 9/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
Sceloporus graciosus	1 meter	on ground shady	♂	A	capt.
S. graciosus	.5 "	" " "	♀	A	preg. capt.
S. graciosus	.5 "	" " "	U	A	obs.
S. graciosus	0 "	" deadfall	U	A	obs
S. graciosus	1 "	under deadfall "	♀	A	capt.
S. graciosus	1.5	under deadfall "	U	A	obs

*Reproductive condition, broken tail, etc.

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83C.10.1.2-2

REPTILE AND AMPHIBIAN COLLECTION SHEET

Project #: 83

what weather conditions? what time visited

Turner / Baker

RDM #

Date	No.	Species	Sex	Age Class	Capture Location	Habitat Description	Collector	Additional Notes *
6/18/75	-	pond visited in Conrad Gulch and Stokes Springs - no						
		frogs or toads heard or seen - ~~S~~ Tiger salamanders						
		were observed in the pond at Stokes Springs						
		pond visited at 2030 - night was cool and clear						

*Reproductive condition, stomach contents, tail loss, etc.

RBOSP PROGRESS REPORT

REPTILE AND AMPHIBIAN COLLECTION SHEET

Project #: 83

Date	No.	Species	Sex	Age Class	Capture Location	Habitat Description	Collector	Additional Notes *

6/19/75 No specimens collected - only Pseudacris triseriata heard calling

Corral Gulch and Stakes Spring were visited

ponds visited at 2000 - Night cool and clear

*Reproductive condition, stomach contents, tail loss, etc.

RBOSP PROGRESS REPORT

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no.4
sect. 2.3.7-
2.3.12

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

Rio Blanco
Oil Shale Project

FOURTH QUARTERLY DATA REPORT

JUNE, JULY & AUG. SUMMER 1975
BOOK 5 OF 9

TERRESTRIAL BASELINE DATA

Gulf Oil Corporation
and
Standard Oil Company (Indiana)
9725 East Hampden Avenue, Denver, Colorado 80231

83.C.9.1.2.1-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: 6-11-75 Observer: VAN HORN Site: Bottomland Meadow

Times: 1910-2025 Temp.: 21°C Wind: 0-5 Sky: Clear

Project: 83-05 Other Comments: Bobolink at 25-50 (viewed at 10' w/ 10x40 after initial observation)

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
657	Lark Bunt	B		|				
599	Brewer's Bl.	A	|	|||	|||	𝍸	𝍸||	
596	RWBBird	A |	|	|||	||	||		
511	Water Pip	B		|				
[illegible]	C-Snipe	B ||		|				
[illegible]	Y-Rump War	A			||			
[illegible]	Mountain Bl.	A	|			|		
658	Vesper Sp.	B	|		||	|		
[illegible]	Brew. Sp.	B	|			||	|	
[illegible]	Kestrel	A			|			|
[illegible]	COCO	A						||
4-14	Magpie	A		|				|
592	Bobolink	B		|				
677	WC-Spar	B		||	|			
683	Song Sp	B	|		||	|		
[illegible]	Meadowlark	B		|		||		
Swallows	Cliff	[illegible]						||||
	Tree	[illegible]						|
	Violet	[illegible]						|||
	Barn	[illegible]						||
	Rough-wing	A						𝍸 ||||

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83.C.9.1.2.12-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: 6-11-75 Observer: Van Horn Site: ~~Horse P-J/Sage~~ Pinyon-Juniper/Sagebrush

Times: 0915-1000 Temp.: 20°C Wind: 0-5 Sky: Clear

Project: 83-05 Other Comments: (ACTIVITY STILL HIGH)

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
673	SPBR	B	//	/	///	/	///	
430	Cliff	A		//				𝍸 /
433	TREE SWA	A						///
439	APCO	A			//			
447	COCU	A						/
505	SICU	B	/	//		///		
506	POCA	B /		//				
645	CHCH	B		//		/		
659	LARK SP	B	/		/			
658	VES SP	B		/	//	/		
354	B.T. Hum	C*			/			/
		*B.D.	value	= 1.5				

RBOSP PROGRESS REPORT

ecology consultants, inc.

83 C.9.1.2.13-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: 6-12-75 Observer: Van Horn Site: ~~Ridgetop~~ Upland Meadow

Times: 0858-1000 Temp.: 18°C Wind: 0-5 Sky: Clear

Project: 83-05 Other Comments: (GUSTING TO 10MPH)

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
658	Vesper B		/		//			
428	Horned L. A	////	/		///	/		//
685	Chestnut— B							
	collanared longspur			//				
645	Green-Tow B				/			
673	Brewer Sp. B		/		/			
130	Kestrel A			/				
505	Mtn. Blue A		/	/				

RBOSP PROGRESS REPORT

83.C.9.1.2.14-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

brush

Date: June 7, 1975 Observer: VanHorn Site: Corral Sage BTm

Times: 1730 - 1840 Temp.: 83°F Wind: 0-5 Sky: 0% OC

Project: 83-05 Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
430	Cliff Swa.	A						||
645	Green T. Tow	B	|	||	|			
673	Brewer's Spa.	B	卌	||	|||	卌	卌 |	
683	Sage Spa	C*	|	|		|		
658	Vesper Spa	C*			|			
659	Lark Spa	B				||		
671	Chip Spa.	|| C*						
435	Rough-wing	A						|||
439	Scrubjay	A		|				
310	Dove	A						|||
106	Goshawk	A						|
447	Raven	A						/
		*B.D.	value =	1.50				

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83.C.9.1.2.15-5

rush

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: 6-12-75 Observer: VanHorn Site: SOUTH SLOPE P-J

Times: 1805-1940 Temp.: 20°C Wind: 0-5 Sky: 20% OC

Project: 83-05 Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
439	SCRUB J	A	/	//			/	
505	Mtn Blue	B	//			//		
373	FLICKER	A			/	/		
526	Solitary	B	/		/			
310	M. Dove	A		////	/	//		
464 P.	BUSHTIT	C*		//				
352	WT Swift	A						//
430	Clift	A						𝍸 /
433	TreeSWA	A						//
435	Rough w.	A						/
525	Gray Vir.	B		//				
557	BTGWAR	B	/			//		
		* B.D.	value =	1.5				

RBOSP PROGRESS

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83.C.9.1.2.16-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: June 6, 1975 Observer: VanHorn Site: NorthSlope PJ 6700' (Hunting club)

Times: 0700-0850 Temp.: 13°C 23°C Wind: 0-5 Sky: 20% oc

Project: 83-05 Other Comments: Rain shower over area at 0600 (approx) 150° → 50° → 340°

Number Recorded Per Strip

	Species		0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
454	PAGA	B		||					
663	JUCA	B			|				
671	SPPA	C*	||	|||	|			|	
425	West. Wood P.	B							
645	Green-t. Tow.	B				||			
657	Grass-hopper	B				|			
557	BT-GWAR	B			||	||||	|	|	
419	Gray Fly	B				|~~|~~	|		
354	B.T. Hummer	C*			|				
673	Brew. Spa.	B					|		
636	Pine Siskin	B							|
373	C. Flicker	A					||	|	
505	Mtn Blue	B				|	||		
526	Sol. Vireo	B				|			
603	Cowbird	A					||		
347	Nighthawk	B							||

song recorded.

*B.D. value = 1.5

Sharp shinned hawk, fly by after transect

mourning doves, after transect |||

call note ~~´ 2

Check song call of gray fly catcher, dusky flycatcher (Black, TG ...) or hummingbird fly!

RBOSP PROGRESS REPORT

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830.91.2.17-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: [illegible]
Observer: [illegible]
Site: Sagebrush - D north slope
Times: [illegible] - 065
Temp.: [illegible]
Wind: [illegible]
Sky: [illegible]
Project: [illegible]
Other Comments: [illegible]

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
673	[illegible]R	B	|||	|||	||||	||	||||	
645	[illegible]	B	|	||	|||	|	||	
671	~~[illegible]~~	~~B~~						
658	[illegible]	C*		||	||			
473	[illegible]	B						
130	FHSP	A						|
354	BTHum	C*						|
373	[illegible]	A						|
505	[illegible]	B					||	
		*B.D.	value=	1.5				
	[illegible]	[illegible]		|				
	WBNT	[illegible]					|	
	[illegible]	[illegible]					||	
	[illegible]	[illegible]						
	[illegible]	[illegible]				|		
	[illegible] dove	[illegible]					|	

RBOSP PROGRESS REPORT

ecology consultants, inc.
83 C 9.1.2.18-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

RDM 7/21

Date: 6-25-75 Observer: Van Horn Site: ~~Mountain~~ Mixed Brush (E) south slope

Times: 1810 - 1930 Temp.: 20°C Wind: 5-10 Sky: 50% oc

Project: 83-05 Other Comments: gusting to 10-15mph

Number Recorded Per Strip

<table>
<tr><th></th><th>Species</th><th>0-10'</th><th>10-25'</th><th>25-50'</th><th>50-100'</th><th>100-200'</th><th>200-400'</th><th>Fly Over</th></tr>
<tr><td>415</td><td>Green-t. Tow</td><td>B</td><td>||</td><td></td><td>|</td><td></td><td>|</td><td></td></tr>
<tr><td>658</td><td>Vesper</td><td>C*|</td><td>|</td><td>|</td><td>||</td><td></td><td></td><td></td></tr>
<tr><td>673</td><td>Brewer</td><td>B</td><td>||</td><td>|||</td><td>||</td><td>|</td><td></td><td></td></tr>
<tr><td>438</td><td>Steller's</td><td>A</td><td></td><td></td><td>|</td><td></td><td></td><td></td></tr>
<tr><td>447</td><td>Raven</td><td>A</td><td></td><td></td><td></td><td></td><td></td><td>|</td></tr>
<tr><td>109</td><td>M.Hawk</td><td>A</td><td></td><td></td><td></td><td></td><td></td><td>|| (♀+♂)</td></tr>
<tr><td>581</td><td>MAC.War</td><td>B</td><td>||</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>373</td><td>Flicker</td><td>A</td><td></td><td>|</td><td></td><td></td><td>|</td><td></td></tr>
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PROGRESS REPORT

FRIDAY

ECI
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83.C 9.1.2.19-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: 6-13-75 Observer: VanHorn Site: Douglas Fir

Times: 0900-1030 Temp.: 20°C Wind: 0-5 Sky: Clear

Project: 83-05 Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
509	RC-King	C*		||		|	|	
438	Stellers J	B	|	||	|			
473	H. Wren	B		||	|			
134	B Grouse	B	|					
417	Ham. Fly	B		|	||			(Song)
454	Mtn Chick	B	||	|	|			
469	SICA	B	||		|		|	
493	TUMI	B		|		||		
499	HYGU	C*		|	||		|	
636	Pine Siskin	B	||	|	||			
628	Cassins Fin	B		|				(Song)
663	JUCA	B	|	||		|		
641	Red Cross	C*	|	|||				
	Unid Warb		||	|	|			(Song - no ID)
		* B.D. value =		1.5				

RBOSP PROGRESS REPORT

ecology consultants, inc.

83.C.9.1.2.20-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: 6-13-75 Observer: VanHorn Site: Aspen

Times: 0700 - 0830 Temp.: 15°C Wind: 0-5 Sky: Clear

Project: 83.05 Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
645	G.T. Tow B			i				
enn. WARB.	~~[illegible]~~ 543 B		l		ll			
473	H Wren B				i			
373	Flicker A				l		l	
646	RS Towhee	C*		l				
509	R.C. Kinglet	C*	ll	l				
581	MacGilvary	B	l					
452	BC. Chick	B		ll	l			
620	Blk Gros.	B		ll				
454	Mtn Chick	B	ll					
134	Blue Grouse	B			l		l	
544	Orange-Crown	C*	l					
325	GH Owl	A		l				
352	AE SA	A						ll
354	B.T. Hum	C*	ll	l				
	~~C. Flicker~~							
390	Downy	A			l			
535	WAR. Vireo	B	l	ll	l	l		
		*B.D	value =	1.5				
	Unkn Warb.		l					

RBOSP PROGRESS REPORT

ECI
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83.C 9.1.2.21-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: June 5, 1975 Observer: Van Horn Site: Riparian

Times: 0720-0900 Temp.: 9°C (48°F) 18°C Finish. Wind: 0-5 Sky: 0% oc

Project: ~~84~~ 83-05 Other Comments: Dick McGuire along

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
430	Cliff Sw.	A			卌 卌			卌 ||||
673	Brewer's Sp.	B	卌 |	||	||||	|||	卌 ||||	
506	Blue-gray	B	|	||	||			
599	Brewer Black	A		|||				
636	Pine Siskin	B						|
435	Rough-winged	A			|			
310	M. Dove	A						||||
493	TUMI	B	|	|||	||	|		
645	G.T. Towhee	B		||		|	||	
628	Cassin Finch	B	||					
544	Orange Crown	C*		|				
596	RWBB	| C*	卌 ||	卌 |	卌 卌 ||			|
354	Bt. Hummer	C*	|	$				
357	BC Hummer	B						
209	Killdeer	A	|	||				
683	Song Spa.	|||| C*	|	|||			|	
	Blue wi. Teal	69 A		♀		|		
	Mallard	059 A		♀	♂			
	Com. Snipe	241 B						
	Sora	175 C*					heard |	
	G. Wing Teal	071 A		♂ ♀				
555	Yellow-rump	B			|			

all except ♂ g.w.t. were identified
cut → waterfowl

Swallow nesting area at N side of Transect, 400 ft.

* B.D. value = 1.5

FBOSP PROGRESS REPORT

Pg 2 of 2

File No: 83.C.5.1.2.14-35

Zog

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name Greenwood-[illegible] Grid A Sample Period JULY 75 Trap Night 1

Date, time traps set (1550) 25 July 75 Date, time traps checked (1000) 26 July 75

Last toe clip # used on previous day 0311 Field Analyst(s) [illegible] Savidge

Project 83 [illegible] QA Check RBM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
[illegible]-1	PEMA	0110	F	A	[illegible]	A	swollen [illegible]
[illegible]-2	PEMA	0312 N	M	J	17	I	—
[illegible]-4	PEMA	0313 N	M	A	18	A	swollen testes
E-5	PEMA	0314 N	F	J	13	I	—
B-4	PEMA	0315 N	F	J	13	I	—
[illegible]	PEMA	0321 N	M	A	18	A	swollen testes
J-6	PEMA	0322 N	F	J	12	I	—
F-8	PEMA	0323 N	M	A	17	I	—
D-8	PEMA	[illegible]	M	A	21	I	could be [illegible]
F-12	PEMA	1253	M	A	[illegible]	A	swollen testes
D-12	PEMA	2200	F	A	[illegible]	I	
[illegible]-12	PEMA	[illegible] N	F	A	[illegible]	[illegible]	
A-13	SPLA	0325 N	M	A	163	I	—
C-13	EUMI	0331 N	M	A	35	I	—

*Key taxonomic characters, physical condition of animal, etc.

File No: 83.C.5.1.2.14-36

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid A Sample Period [illegible] Trap Night [illegible]

Date, time traps set [illegible] 1000 [illegible] 75 Date, time traps checked [illegible] 27 [illegible] 75

Last toe clip # used on previous day [illegible]1 Field Analyst(s) [illegible]

Project [illegible] QA Check RDM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
H-2	[illegible]PLA	[illegible]32 N	M	A	13[illegible]	I	—
[illegible]	[illegible]	1000	F	A	[illegible]	I	[illegible]
[illegible]	PEMA	0[illegible]1[illegible]	M	[illegible]	16	I	-
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I	—
[illegible]	Mustela erminea	—			—	—	52 mm tail length
[illegible]	[illegible]	[illegible]	[illegible]	A	[illegible]	I	—
[illegible]	[illegible]	0[illegible]	[illegible]	A	[illegible]	I	—
M-[illegible]	[illegible]	[illegible]	F	[illegible]	[illegible]	A	[illegible]
[illegible]		[illegible]	M	A	[illegible]	I	[illegible]
I-9	[illegible]	0123	F	A	[illegible]	A	[illegible]
H-9	[illegible]MA	0122	F	J	[illegible]	I	—
[illegible]	[illegible]	[illegible]40	M	A	[illegible]	I	—
F-12	[illegible]LA	[illegible]	F	A	[illegible]	I	—
D-12	[illegible]	0124	M	[illegible]	[illegible]	I	-
[illegible]-12	[illegible]LA	0334 N	F	A	130	D	dead in trap
B-12	[illegible]	[illegible]	M	[illegible]	[illegible]	I	—
A-12	PEMA	0341 N	F	A	22	A	[illegible] lact.
[illegible]	[illegible]MT	4100	M	A	[illegible]	A	[illegible]

*Key taxonomic characters, physical condition of animal, etc.

File No: 83.C.5.1.2.14-37

2

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid Sample Period Trap Night

Date, time traps set (2000) [illegible] 75 1000 Date, time traps checked (0830) [illegible] 75

Last toe clip # used on previous day 0132 Field Analyst(s) [illegible]

Project [illegible] QA Check ehm 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
[illegible]	PEMA	[illegible]4N	F	J	15	I	—
D1	PEMA	0133N	[illegible]	J	17	I	—
H1	PEMA	0135N	F	A	21	A	swollen nipples
H1	PEMA	0141N	F	J	15	I	—
L-3	PEMA	0142N	M	J	17	I	—
D-3	EUMI	0143N	F	A	40	U	—
I-3	PEMA	0122	F	A	15	A	swollen vulva
B-8	EUMI	0131	F	A	35	U	
C-8	EUMI	[illegible]	M	A	32	U	
F-8	PEMA	1653	F	J	20	U	
D-8	SPLA	0145N	F	A	145	D	
J-7	EUMI	1200	M	A	[illegible]	D	
D-11	EUMI	0151N	M	A	30	D	
I-11	SPLA	0152N	F	A	115	I	
L-13	PEMA	0153N	F	A	15	I	
K-13	SPLA	0154N	M	A	145	U	
F-13	PEMA	2200	I	A	20	A	swollen nipples

*Key taxonomic characters, physical condition of animal, etc.

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SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid A Sample Period [illegible] Trap Night [illegible]

Date, time traps set [illegible] 75 Date, time traps checked [illegible] 75

Last toe clip # used on previous day 0341 Field Analyst(s) [illegible]

0730

Project [illegible] QA Check RFM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
K-2	[illegible]	1042	M	A	[illegible]	A	[illegible]
[illegible]	[illegible]	0316	F	A	[illegible]	I	[illegible]
[illegible]	[illegible]	0322	F		[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	M	A	16	I	——
B-3	[illegible]	[illegible]	M	A	[illegible]	I	[illegible]
[illegible]	[illegible]	[illegible]	F	–			
[illegible]	[illegible]	[illegible]	M	J	[illegible]		——
[illegible]	[illegible]	0313	[illegible]	A	[illegible]		——
[illegible]	[illegible]	[illegible]		–			——
[illegible]	[illegible]	[illegible]	[illegible]	A	[illegible]		——
[illegible]	[illegible]	[illegible]	M	A	22	I	——
[illegible]	[illegible]	[illegible]	F	A	U	D	——
J-5	PEMA	[illegible]	F	J	[illegible]	I	[illegible]
[illegible]	EUMI	0345	M	A	32	I	——
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	Lactating
[illegible]	[illegible]	[illegible]	[illegible]	A	[illegible]	I	Escaped from weigh bag
[illegible]	SPLA	[illegible]	[illegible]	A	[illegible]	I	——
K-12	SPLA	0152	F	U	110	I	——
[illegible]	EUMI	0204	M	A	[illegible]	I	——
D-12	PEMA	[illegible]					
[illegible]	PEMA	[illegible]		A			

*Key taxonomic characters, physical condition of animal, etc.

File No: 83.C.5.1.2.14-39

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid 1 Sample Period July 1975 Trap Night 3

Date, time traps set 0730 [illegible] July 75 Date, time traps checked (0700) [illegible] 75

Last toe clip # used on previous day 0154 Field Analyst(s) [illegible]

Project 83 QA Check RDM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
F-1	PEMA	0155	M	J	17	I	
I-1	PEMA	0142	M	A	19	I	
L-3	PEMA	0211 N	F	A	21	A	Swollen vulva
B-8	PEMA	0321	M	A	17	A	[illegible]
D-8	PEMA	0324	F	A	19	A	swollen vulva
[illegible]-8	PEMA	0045	M	A	17	I	
H-8	EUMI	0212N	M	A	37	D	
J-8	PEMA	0322	F	J	12	I	
E-7	PEMA	0213N	M	J	15	I	
A-11	EUMI	0131	F	A	37	U	
J-11	SPLA	0332	M	A	135	D	
F-13	SPLA	0214 N	M	A	149	I	
[illegible]-13	EUMI	0125	M	J	27	I	
[illegible]-12	EUMI	0215N	M	A	32	U	

*Key taxonomic characters, physical condition of animal, etc.

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File No: C.5.1.2.15-29
1 of 1

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name Smith-[illegible] Grid B Sample Period July 75 (4) Trap Night 1

Date, time traps set 26 July 75 - 1330-1830 Date, time traps checked 26 [illegible] 75 - [illegible] - 1130

Last toe clip # used on previous day 3003 Field Analyst(s) [illegible] / [illegible]

Project 2305 P (83) Bag wt - 12 gm QA Check RBM 8/[illegible]75

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
A-12	PEMA	3004N	F	A	18	I	
A-11	EUMI	0042	F	A	36	I	
A-10	EUMI	0402	F	A	33	I	
A-8	EUMI	3005N	M	A	34	I	
A-3	PEMA	30[illegible]N	F	A	19	I	
B-[illegible]	EUMI	3000	F	A	40	I	[illegible] mammaries
B-12	PEMA	1055	F	A	25	A	Pregnant
C-12	EUMI	0301	F	A	40	I	
C-2	PEMA	1045	F	A	26	A	[illegible] vaginal bleeding - pregnant
F-13	EUMI	3020N	M	A	33	I	
F-10	EUMI	0043	M	A	32	I	
H-1	EUQU	0045	F	A	60	I	
J-2	PEMA	0004	F	A	24	I	
H-8	EUMI	0100	F	A	42	I	
H-13	PEMA	1044	F	A	26	U	Possibly pregnant
J-12	SO[illegible]A	3030N	M	A	196	I	
I-9	EUMI	0102	M	A	52	A	
I-7	PEMA	1000	F	A	22	U	Appears pregnant
I-6	EUMI	3040N	M	A	33	I	
K-10	PEMA	1030	F	A	24	I	
L-10	EUQU	0052	U	A	60	I	
K-11	NECI	3050N	M	A	176	I	Ectoparasites taken - Fleas
[illegible]-3	EUMI	4300	M	A	33	I	
M-6	PETR	3100N	F	A	26	I	
M-1	EUQU	3200N	M	A	52	D	Dead in trap HF - 32 mm

ey taxonomic characters, physical condition of animal, etc.

ECI

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File No: C.5.1.2.15-3
1007

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name South PJ Grid B Sample Period July 25 (4) Trap Night 2

Date, time traps set 25 July 85 4PM Date, time traps checked 27 July 6AM

7/26 0805-1330

Last toe clip # used on previous day 3200 Field Analyst(s) McGuire/[illegible]

Project RGOSP 3rd wk = 13 [illegible] QA Check rcm 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
K-1	PEMA	0430	M	A	16	I	
M-1	PEMA	1030	F	A	20	I	(1-4)030 Toes 1+4 missing left front foot
M-5	NECI	3300N	M	J	108	I	
L-4	EUMI	0320	M	A	36	I	
J-12	PEMA	1044	F	A	26	A	pregnant?
I-7	EUMI	0100	F	A	35	A	lactating
G-7	EUMI	3040	M	A	32	I	
G-8	PEMA	3400N	M	J	15	I	
H-13	EUMI	3020	M	A	32	I	
F-13	EUMI	4100N	F	J	27	I	
F-12	PEMA	4002N	M	A	17	A	
F-7	EUMI	4003N	M	A	29	A	

*Key taxonomic characters, physical condition of animal, etc.

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File No: C.5.1.2.15-31/2022

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] KT Grid ____ Sample Period [illegible] 75 (4) Trap Night 2

Date, time traps set [illegible] 7/26 0805 - 1330 Date, time traps checked 27 Jul 75 - 0630

Last toe clip # used on previous day 1104 Field Analyst(s) [illegible]

Project [illegible] 0-83 Bag wt - 3 gm QA Check RBM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
A-10	EUMI	0301	F	A	35	I	
[illegible]	[illegible]	1105N	F	[illegible]	137	I	
B-11	[illegible]	1111N	M	A	18	I	
B-12	[illegible]	[illegible]	M	A	30	I	
C-13	SPLA	1202N	F	A	128	I	
C-12	PEMA	0155	[illegible]	A	24	I	
C-3	SPLA	1203N	M	A	144	I	
C-2	SPLA	1204N	M	A	[illegible]	I	
D-1	EUMI	1705N	F	A	[illegible]	I	
D-3	PEMA	1034	F	A	23	I	
C-6	PEMA	1301N	M	J	13	I	
E-5	EUMI	1045	M	A	32	I	
F-3	NICE	1302N	M	J	107	I	
F-1	EUMI	1304N	M	J	23	I	

*Key taxonomic characters, physical condition of animal, etc.

ECI

File No: 0.5.1.2.15-32
Sheet 1 of 2

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] PJ Grid B Sample Period [illegible] (4) Trap Night [illegible]
Date, time traps set [illegible] 7/27 - 0600 Date, time traps checked [illegible] July 27 [illegible]
Last toe clip # used on previous day 4003 Field Analyst(s) [illegible]
Project [illegible] Bag wt = 13 gm QA Check RDM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
J-1	SPLA	4004N	F	A	175	I	
K-1	[illegible]	[illegible]5N	M	A	37	I	
K-3	EUQU	0045	F	A	57	I	
M-2	EUQU	1004	F	A	65	D	lactating
M-3	SPLA	4010N	M	A	140	I	
M-4	NECI	4020N	M	A	210	I	
M-6	PEMA	0024	M	A	17	I	
M-8	NECI	4030N	F	J	87	I	
M-11	SPLA	4040N	F	A	150	I	
M-12	SPLA	4050N	F	J	135	I	
M-13	SPLA	0435N	F	A	180	D	pregnant
L-8	EUQU	[illegible]	F	A	57	D	
L-[illegible]	NECI	[illegible]	M	A	147	I	lost tail
K-8	NECI	0442N	M	A	—	I	escaped before weighing

*Key taxonomic characters, physical condition of animal, etc.

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File No: C.5/2.15-33
2072

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name ______ Grid B Sample Period [illegible] 75 Trap Night 3

Date, time traps set 25 July 75 1100 Date, time traps checked 0615 [illegible] 75

Last toe clip # used on previous day 130[illegible] 7/27 0600 Field Analyst(s) McGuire/Aronson

Project PBSP-83 [illegible] 3 gm QA Check RDM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status.	Additional Notes*
A-2	SPLA	1305N	M	A	178	I	
B-2	SPLA	1402N	M	A	193	I	
B-3	EUMI	1403N	F	A	32	I	
B-12	EUMI	1405N	F	A	32	I	
C-10	SPLA	0111N	F	A	147	I	
D-1	EUMI	0330	F	A	37	I	
D-2	PEMA	1034	F	A	22	U	Appears pregnant
D-3	PEMA	1023	F	A	25	U	Red vagina
D-5	EUMI	0100	F	A	43	I	
D-6	PEMA	1254	M	A	23	A	Descended testes
D-11	SPLA	0112N	M	A	141	I/D	Dead in trap
E-12	EUMI	[illegible]	F	A	29	I	
F-12	PEMA	1044	F	A	28	U	Appears pregnant
E-1	EUMI	0113N	F	A	33	I	
F-5	SPLA	0114N	F	A	225	I	
G-6	EUMI	0115N	F	A	28	I	
G-7	EUMI	0121N	M	A	30	I	
G-9	EUMI	0043	M	A	32	I	
F-13	EUMI	0122N	M	A	32	I	

*Key taxonomic characters, physical condition of animal, etc.

ECI

File No: C.5.1.2.15-34

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

1 of 2

Grid Name South [illegible] Grid [illegible] Sample Period [illegible] (4) Trap Night 4

Date, time traps set [illegible] Date, time traps checked [illegible] 85 6:10 AM

Last toe clip # used on previous day 7/28 0615 0122 Field Analyst(s) [illegible]

Project [illegible] QA Check RDM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status.	Additional* Notes
K-1	EUMI	0023N	M	J	25	I	
[illegible]	EUMI	[illegible]	M	A	50	A	testes descended)
M-2	SPLA	0125N	M	J	—	I	escaped before weighing
M-8	SPLA	0131N	M	A	185	I	
M-12	EUMI	0055	F	A	50	I	
M-13	EUMI	0132N	M	A	45	I	
L-10	SPLA	0133N	M	A	157	I	
L-3	EUQU	1104	F	A	65	I	
K-4	EUQU	3200	M	A	55	/	
K-8	NECI	0042	M	A	206	I	
K-10	SPLA	0134N	M	J	117	I	
G-7	EUMI	0115	M	[illegible]	[illegible]	I	
H-5	NECI	0135N	F	J	99	I	
H-12	SPLA	3030	M	A	—	I	escaped before weighing

*Key taxonomic characters, physical condition of animal, etc.

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File No: C 5.1.2.15-35

20/2

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid B Sample Period [illegible] 197[illegible] Trap Night 4

Date, time traps set 2 pm [illegible] Date, time traps checked 0610 [illegible] 75

7/28 0615

Last toe clip # used on previous day 0442 Field Analyst(s) [illegible]

Project [illegible] QA Check RAM 9/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
B-2	PEMA	1042	F	A	24	I	
B-3	SPLA	[illegible]3N	F	A	1[illegible]6	I	Ticks present
B-8	[illegible]	[illegible]	[illegible]	A	35	I	
B-10	SPLA	1203	M	A	149	I	
B-11	SPLA	0444N	F	A	132	I	
[illegible]	EUMI	1201	M	A	30	I	
[illegible]	PEMA	1055	F	A	22	I	
C-11	SPLA	[illegible]	M	A	126	I	
C-3	NECI	0451N	F	J	99	I	
C-1	PEMA	1045	F	A	20	I	
D-1	EUMI	0452N	M	A	28	I	
D-6	SPLA	0453N	F	A	142	I	Bitten by this one
D-8	EUMI	0454N	F	A	31	I	
D-13	PEMA	1044	F	A	22	U	Red vagina-Not lactating
F-13	EUMI	0455N	M	A	28	I	
F-10	SPLA	0111	F	A	139	I	
F-9	EUMI	0100	F	A	41	I	

*Key taxonomic characters, physical condition of animal, etc.

ECI

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File No: C 5.1.2.15-36

102

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name South PF Grid 1 Sample Period [illegible] (4) Trap Night 5

Date, time traps set [illegible] Date, time traps checked [illegible]

Last toe clip # used on previous day 7/29 0610 0135 Field Analyst(s) [illegible]

Project [illegible] QA Check RDM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
L-1	SPLA	0141N	F	A	117	I	
L-2	[illegible]	0131	F	A	115	I	
M-2	PETR	[illegible]	F	A	27	-	
[illegible]-6	PETR	0135N	M	A	2[illegible]	I	
M-12	NECI	0130	F	J	87	I	
K-4	FUQU	0144N	M	A	47	I	
K-12	SPLA	0133	M	A	127	I	
[illegible]	FUQU	0151N	M	A	47	I	
[illegible]-12	[illegible]	0043	M	U	27	I	
[illegible]-9	[illegible]	1030	F	A	26	A	[illegible]
I-6	SPLA	0152N	F	A	247	I	
I-5	FUQU	[illegible]	M	A	50	I	
I-5	SPLA	1204	M	A	"	I	
[illegible]-2	[illegible]	0304	F	A	23	I	

*Key taxonomic characters, physical condition of animal, etc.

ECI

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File No: CS.1.2.15-37

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET 252

Grid Name [illegible] Grid [illegible] Sample Period 2 [illegible] (4) Trap Night 5

Date, time traps set [illegible] 7/29 0610 Date, time traps checked 30 [illegible]

Last toe clip # used on previous day ______ Field Analyst(s) [illegible]

Project [illegible] 83 [illegible] QA Check RBM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status.	Additional Notes*
[illegible]-3	[illegible]	[illegible]	M	A	15	I	
B-1	SPLA	1305	M	A	177	I	
B-3	PEMA	1042	F	A	22	I	
B-6	PEMA	[illegible]	F	A	25	I	
B-11	SPLA	1203	M	A	147	I	
B-12	EUMI	113N	F	A	28	I	
C-12	P[illegible]	[illegible]	F	A	18	I	
C-1	SPLA	4334	F	A	[illegible]	I	
D-6	PEMA	1254	M	A	22	I	
D-7	EUMI	0100	F	A	40	I	
F-7	EUMI	4003	M	A	32	I	
D-9	EUMI	114N	U	A	44	I	
D-13	SPLA	[illegible]	M	A	165	I	
E-13	EUMI	3120	M	A	31	I	
F-12	SPLA	1302	F	A	130	I	
G-9	SPLA	0134	M	A	112	I	
F-9	EUMI	[illegible]	F	A	32	I	
G-7	EUMI	115N	F	A	30	I	
F-4	NECI	[illegible]	F	J	116	I	
H-1	NECI	0051	F	J	99	I	
H-9	NECI	0135	F	J	96	I	

*Key taxonomic characters, physical condition of animal, etc.

ECI

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File No 83.C.5.1.2.16-26

1 of 2

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid [illegible] Sample Period July 75 Trap Night 1

Date, time traps set (1930) 25 [illegible] Date, time traps checked (1930) 26 [illegible]

Last toe clip # used on previous day start w/ 4100 Field Analyst(s) Sam, [illegible]

Project 83 QA Check RMM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
H-2	EUMI	0200	F	A	39	I	—
J-2	EUMI	4100 N	M	J	30	I	—
K-2	EUMI	4200 N	M	J	28	I	—
L-4	EUMI	0049	F	A	40	I	—
L-12	NECI	4300 N	M	J	78	I	—
L-13	SPLA	4400 N	M	A	197	I	—
J-7	EUMI	1100	F	A	38	A	lactating
J-6	SPLA	1011 N	F	J	99	I	—
I-5	EUMI	1012 N	M	J	27	I	—
J-4	EUMI	1013 N	F	J	25	I	—
H-3	EUMI	1014 N	M	J	20	I	—
H-4	SPLA	1015 N	F	U	107	I	—
F-7	SPLA	1021 N	M	U	111	I	—
C-11	SPLA	1022N	M	A	162	I	—
D-11	SPLA	1023N	F	J	99	I	—
A-13	PEMA	1403	F	A	21	A	lactating
A-9	EUQU	1024N	F	A	49	I	
A-6	EUQU	1025N	F	A	47	I	
A-4	SPLA	1031N	F	A	157	I	—

*Key taxonomic characters, physical condition of animal, etc.

[illegible] 2

File No: 83.C.5.1.2.16-27

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

2 of 2

Grid Name Hunt Club PJ. Grid [illegible] Sample Period July 75 Trap Night 1

Date, time traps set ([illegible]) 25 July Date, time traps checked 1430 26 July [illegible]

Last toe clip # used on previous day 2400 Field Analyst(s) [illegible]

Project 83 QA Check RMn 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
H-1	EUMI	3001N	F	J	29	D	—
J-1	EUMI	3002N	M	J	31	I	—
K-1	EUMI	3003N	F	J	31	I	—
M-2	SPLA	3004N	F	J	85	I	—
M-3	PEMA	3005N	F	A	20	A	Pregnant
M-4	SPLA	3010N	M	J	104	I	—
M-6	PETR	3020N	M	A	20	A	swollen testes
K-13	PETR	1400	F	A	31	A	swollen nipples
I-4	PEMA	1001	M	A	20	A	Swollen testes
E-4	EUMI	3030N	F	J	28	I	
D-2	PEMA	0005	M	A	19	D	
D3	SPLA	3040N	M	A	140	I	
C-8	PETR	3050N	F	A	24	A	swollen nipples
B-12	SPLA	1405	M	A	195	I	
B-10	PEMA	0111	F	A	23	A	swollen nipples
B-3	SPLA	3100N	F	A	144	I	
B-2	PEMA	3200N	F	U	19	I	
B-1	SPLA	3300N	M	A	103	I	

*Key taxonomic characters, physical condition of animal, etc.

ECI

* Check I.D. on 0440 from prev data

File No: 83.C.5.1.2.16-28

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid [illegible] Sample Period [illegible] Trap Night 2

Date, time traps set ~~1500~~ 1430 26 July 85 Date, time traps checked 1100 27 July 85

Last toe clip # used on previous day 3200 13 Field Analyst(s) Sara Savidge

Project 83 QA Check RPM 9/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
A2	PEMA	2122	F	A	23	I	
F-2	EUMI	0204	M	A	U	U	Got away while putting in weigh bag
H-2	SPLA	3300N	F	A	155	I	
J-2	EUMI	3003	F	A	31	U	
K-2	EUMI	1013	F	J	21	I	
L-2	EUMI	3400N	F	J	27	U	
L-11	SPLA	4001N	M	A	145	I	
L-12	PETR	1300	M	A	22	A	Enlarged testes
K-13	NECI	4300	M	J	74	I	
* K-11	PEMA X	0440	F	A	27	A	swollen nipples see night 4
K-8	EUMI	1100	F	A	37	A	" "
K-4	EUMI	4002N	M	J	22	I	
H-3	PEMA	2001	M	A	17	D	
G-5	SPLA	4003N	M	J	104	I	
A-13	SPLA	4004N	M	A	121	I	
A-12	PEMA	0111	F	A	25	A	End of lactation
A-13	PEMA	0-25	M	A	—	D	
A-11	PEMA	1403	F	A	21	A	swollen nipples
B-10	SPLA	1405	M	A	185	U	
A-4	SPLA	3300	M	A	187	I	
B-4	~~EUMI~~ EUQU	2005	M	A	5.3	I	(see may data) RDM
B-3	PEMA	3200	F	A	20	U	
A-3	EUQU	4005N	F	A	55	I	

*Key taxonomic characters, physical condition of animal, etc.

ECI

File No: 83.C.5.1.2.16-29

2 [illegible]

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid C Sample Period [illegible] Trap Night 2

Date, time traps set ~~[illegible]~~ 1430 [illegible] July 75 Date, time traps checked (1100) [illegible] July 75

Last toe clip # used on previous day 1031 Field Analyst(s) [illegible]

Project 83 QA Check RDM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
C-1	EUMI	3002	M	A	35	I	—
D-1	EUMI	0100	M	A	U	I	[illegible]
J-1	EUMI	1032N	F	A	30	I	—
L-1	EUMI	1033N	F	A	36	I	—
M-2	EUMI	0044	F	A	35	I	—
M-3	EUMI	[illegible]	F	A	[illegible]	I	—
M-4	SPLA	1042N	F	A	154	I	—
M-6	NECI	1043N	F	U	U	I	[illegible]
L-13	PETR	1400	F	A	[illegible]	A	lactating
J-7	EUMI	1004	M	J	U	I	—
I-5	EUMI	3020	F	A	31	I	—
J-3	EUMI	1012	M	J	25	I	—
F-4	EUMI	1044N	F	J	[illegible]	I	—
F-7	SPLA	4400	M	A	154	I	—
D-[illegible]	SPLA	1023	F	J	[illegible]	I	—
D-8	PETR	3010	F	A	[illegible]	A	[illegible]
D-3	SPLA	1045N	M	A	138	I	—

*Key taxonomic characters, physical condition of animal, etc.

File No: 83.C.5.1.2.16-30

/ [illegible]

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] P J. Grid 2 Sample Period [illegible] 75 Trap Night 3

Date, time traps set ~~[illegible]~~ 1100 [illegible] 75 Date, time traps checked (1200) 28 [illegible] 75

Last toe clip # used on previous day 1045 Field Analyst(s) [illegible]

Project [illegible] QA Check RBM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
B-1	[illegible]	1051 N	M	J	2[illegible]	I	—
[illegible]	[illegible]	[illegible]	F	A	[illegible]	I	—
D-1	[illegible]	105[illegible] N	M	A	[illegible]	I	[illegible]
J-1	[illegible]	10[illegible]2	M	A	34	—	
L-1	SPLA	[illegible]	[illegible]	A	145	I	
M-2	[illegible]	4[illegible]	M	A	[illegible]	I	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]		10[illegible]	[illegible]	A	U	I	[illegible]
[illegible]	P[illegible]R	1400	F	[illegible]	[illegible]	A	teats swollen
J-6	SPLA	1015	F	A	104	I	—
H-13	SPLA	1154 N	M	A	158	I	—
E-9	PEMA	1055 N	M	A	U	I	escaped [illegible]
F-2	[illegible]	0111	F	A	[illegible]	A	[illegible]
E-4	SPLA	3040	M	A	120	I	—
B-8	EUQU	1020	M	A	94	I	h.f. 30 mm., ran up tree
B-12	EUQU	1101 N	F	A	70	A	Quadrant (smaller) 32[illegible]
F-13	PEMA	1102 N	M	J	14	I	—

*Key taxonomic characters, physical condition of animal, etc.

[illegible]

File No: 83.C.5.1.2.16-31

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid [illegible] Sample Period [illegible] 1985 Trap Night 3

Date, time traps set 1100 27 July 1985 Date, time traps checked 1200 28 July 1985

Last toe clip # used on previous day 4005 Field Analyst(s) [illegible]

Project [illegible] QA Check RMM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
A-2	PEMA	4010N	F	A	25	A	Swollen vulva
F-2	PEMA	3005	F	A	23	A	Pregnant
H-2	EUMI	3003	F	A	30	I	
J-2	EUMI	4020N	M	J	28	I	
L-6	SPLA	3004	F	J	77	I	
L-8	SPLA	4030N	M	A	141	I	
L-12	NECI	4300	U	J	68	I	
K-12	PETR	1300	M	A	22	A	Enlarged testes
K-8	SPLA	1011	F	U	102	I	
K-4	EUMI	1100	F	A	38	A	swollen nipples
I-4	EUMI	1013	F	A	20	D	
I-5	EUMI	4002	M	J	26	I	
G-10	-SPLA	4003	M	U	102	I	
F-7	PEMA	4040N	M	A	17	I	
C-4	SPLA	1045	F	A	121	I	
C-12	SPLA	1022	M	A	155	I	
A-12	EUQU	4050N	F	A	42	D	
A-11	SPLA	4004	M	A	116	I	
A-10	EUMI	0134N	M	J	26	I	
A-8	SPLA	0135N	F	A	135	I	
A-4	SPLA	1031	F	A	146	I	

*Key taxonomic characters, physical condition of animal, etc.

File No: 83.C.3.1.2.76-32

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid C Sample Period [illegible] Trap Night 4

Date, time traps set 1200 7/28 [illegible] Date, time traps checked [illegible]

Last toe clip # used on previous day 1102 Field Analyst(s) [illegible]

Project 83 QA Check RAM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
A-2	SPLA	1103N	M	A	156	I	
E-2	EUMI	1052	F	A	34	I	
D-2	PEMA	4040	M	J	16	I	
E-2	SPLA	3300	F	A	142	I	
K-12	PETR	1400	F	A	31	A	Pregnant ✓ 11
K-10	PEMA	0440	F	A	27	A	
F-4	SPLA	3040	M	A	123	I	
G-4	SPLA	4400	M	A	146	I	
G-6	SPLA	1015	F	J	108	I	
F-7	EUMI	0014	F	A	36	I	
F-11	EUMI	1104N	F	I	28	I	
D-8	PEMA	3050	F	A	22	A	Swollen nipples
D-7	[illegible]	1105N	M	A	110	I	
C-3	EUMI	1044	F	J	26	I	
C-11	SPLA	1023	F	J	94	I	
C-13	SPLA	1022	M	A	142	I	
A-12	SPLA	1201N	F	A	134	I	
B-11	SPLA	4000	M	UA	110	I	
A-8	SPLA	1202N	M	A	186	I	
A-3	SPLA	1203N	M	A	13[illegible]	I	

*Key taxonomic characters, physical condition of animal, etc.

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File No: 83C 512.16 -33

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SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name Hunt club P.J. Grid C. Sample Period July 75 Trap Night 4

Date, time traps set ~~[illegible]~~ 1200 7/28 Date, time traps checked (1200) 29 July 75

Last toe clip # used on previous day 0141 Field Analyst(s) Sims, Savage

Project

QA Check RMI 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
[illegible]	PEMA	3600	F	A	13	A	[illegible]
D-1	EUMI	1032	F	A	30	I	
J-1	SPLA	3010	M	J	99	I	—
L-1	SPLA	4030	M	A	134	I	—
M-2	EUMI	1033	F	A	31	I	—
M-4	PEMA	3005	F	A	24	A	[illegible]
M-6	NECI	1043	F	U	91	I	—
[illegible]	SPLA	0142 N	F	A	116	I	—
J-13	PETR	1300	M	A	20	I	—
J-9	PEMA	0430	F	A	U	A	[illegible]
J-7	SPLA	1011	F	U	91	I	—
H-3	EUMI	1014	M	J	20	I	—
I-4	EUMI	1012	M	J	22	I	—
I-5	EUMI	1100	F	A	34	I	—
H-6	SPLA	4003	M	A	102	I	—
E-4	SPLA	1045	M	A	134	I	—
B-3	SPLA	0143N	F	A	U	I	escaped from weigh bag
B-6	SPLA	0144N	M	A	142	I	—
A-10	EUMI	0145 N	M	A	29	I	—
A-4	EUQU	1025	F	A	42	I	—
							—

*Key taxonomic characters, physical condition of animal, etc.

File No: 83 C 5.1.2.16-34

1 of 2

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid 2 Sample Period JULY 75 Trap Night 5

Date, time traps set ~~[illegible]~~ 1000 7/29 Date, time traps checked (1200) 30 [illegible]

Last toe clip # used on previous day 1203 Field Analyst(s) [illegible]

Project 83 QA Check RPM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
A-1	EUMI	1051	M	U	26	I	subadult
B-1	EUMI	4100	M	U	27	I	"
[illegible]	[illegible]	4001	M	U	26	I	"
D-1	EUMI	1032	F	U	27	I	"
J-1	EUMI	1204 N	F	A	30	I	
K-1	PEMA	1203 N	M	A	18	I	
L-1	SPLA	3010	M	U	102	I	subadult
M-1	PEMA	1301 N	M	U	15	I	"
M-4	SPLA	1302 N	M	A	133	I	—
M-6	SPLA	4030	M	A	128	I	—
J-13	SPLA	4400	M	A	142	I	—
J-11	PEMA	0420	F	A	29	A	Pregnant
[illegible]-3	EUMI	1014	M	J	22	I	
H-4	SPLA	1015	F	U	96	I	
I-5	EUMI	1012	F	U	22	I	
[illegible]-3	SPLA	1023	F	U	83	I	
F-13	PEMA	1400	F	A	28	A	Pregnant
D-9	PEMA	0111	F	A	20	A	[illegible] nipples
D-7	EUMI	1302 N	F	U	26	I	—
A-6	PEMA	[illegible]	[illegible]	A	[illegible]	A	Dupe?? [illegible] open [illegible]

*Key taxonomic characters, physical condition of animal, etc.

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File No: 83C51216-35
2 of 2

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid C Sample Period [illegible] Trap Night

Date, time traps set [illegible] 1000 Date, time traps checked [illegible]

Last toe clip # used on previous day [illegible] Field Analyst(s) [illegible]

Project [illegible] QA Check RDM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
A-2	PEMA	01511	M	A	15	I	
B-2	PEMA	0122	M	A	29	A	enlarged scrotum
[illegible]-2	SPLA	3300	F	A	129	I	almost dead
L-4	SPLA	3004	F	J	80	I	
L-8	NECI	1043	F	J	87	I	
L-10	SPLA	1611	F	J	85	I	
K-12	NECI	4300	M	J	[illegible]	I	
K-10	PEMA	01520	M	A	15	I	
G-4	EUMI	1044	F	J	24	I	
G-[illegible]	SPLA	1045	M	A	110	I	
F5	SPLA	3040	M	A	109	I	
F7	CUPI	1100	F	A	35	U	
E9	SPLA	4003	[illegible]	A	107	I	
E8	PEMA	1403	F	A	23	A	enlarged nipples
E5	PEMA	4040	M	A	13	I	
C6	SPLA	1001	M	A	102	I	
C13	SPLA	4004	M	A	105	I	

*Key taxonomic characters, physical condition of animal, etc.

ECI

File No: 83C.5.1.2.17-35

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name [illegible] Grid D Sample Period [illegible] 1975 Trap Night 5

Date, time traps set 7/30 1100 Date, time traps checked 0900 [illegible]

Last toe clip # used on previous day 1302 Field Analyst(s) [illegible]

Project [illegible] QA Check RBM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
-13	EUMI	1304N	M	A	30	I	
-11	EUMI	1305N	F	A	41	I	
-3	EUMI	1045	F	A	28	U	
K-8	SPLA	1401N	F	A	179	I	
J-13	EUMI	1103	F	U	30	I	
I-8	PEMA	1402N	M	A	17	I	Ticks
J-5	SPLA	0245N	M	A	154	I	
H-6	PEMA	2040	F	A	26	I	
B-12	PEMA	4003N	F	J	17	I	
B-3	PEMA	0042	F	A	23	I	
B-2	PEMA	4004N	F	A	20	I	
C-6	LACU	4005N	F	A	20	I	23mm tail
C-11	SPLA	4010N	F	A	156	I	
C-12	PEMA	1054	M	A	21	I	
D-8	SPLA	3005	M	A	157	I	
D-7	SPLA	4020N	M	A	197	I	

*Key taxonomic characters, physical condition of animal, etc.

[illegible] PROGRAM

File No: 83.C 5.1.2.18-29

20/?

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name Mixed Brush Grid E Sample Period [illegible] Trap Night 2

Date, time traps set 26 July 0910 Date, time traps checked 27 July 0915

Last toe clip # used on previous day 1001 Field Analyst(s) BAKER

Project 83 QA Check RMM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional Notes*
J-4	PEMA	1002N	F	A	21	A	Lactating
J-8	PEMA	1003N	F	A	21	A	Pregnant
J-10	PEMA	2001	[illegible]	A	18	I	—
J-12	PEMA	3300	F	A	18	I	—
E-12	PEMA	1050	M	A	21	A	descended testes
E-9	PEMA	0450	M	J	14	I	descended testes sm
F-6	EUMI	1004N	F	A	37	A	Lactating
E-6	PEMA	4002	M	A	16	I	—
E-3	PEMA	U	U	U	U	U	escaped
C-4	PEMA	0120	F	A	24	A	Lactating
C-8	EUMI	1005N	M	U	21	U	no determination of sex animal [illegible]
C-12	EUMI	1010N	M	A	27	I	—
A-11	EUMI	1020N	F	A	41	A	Lactating
A-10	PEMA	1030N	F	J	16	I	[illegible] toe clip used (?) see last sampling trip

*Key taxonomic characters, physical condition of animal, etc.

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File No: BC 5.1.2.18-34

SMALL MAMMAL LIVE TRAPPING FIELD DATA SHEET

Grid Name Mixed Brush Grid E Sample Period July '75 Trap Night 5

Date, time traps set 29 July 0900 Date, time traps checked 30 July 0900

Last toe clip # used on previous day 1022 Field Analyst(s) BAKER

Project RBOSP QA Check RVM 8/1

Capt. Loc.	Species	Toe Clip No.	Sex	Age Class	Animal Weight (gm)	Reprod. Status	Additional* Notes
M-3	EUMI	4005		A			[illegible]
K-8	PEMA	1023		J	[illegible]		–
K-13	EUMI	1024N	F	[illegible]	[illegible]	[illegible]	–
H-10	PEMA	1025N	F	J	13	I	–
G-7	SPLA	1031N	F	[illegible]	139	I	–
G-4	[illegible]	4040	M		[illegible]	[illegible]	–
D-5	EUMI	1032N	M	A	[illegible]	[illegible]	–
D-10	EUMI	1033N	F	[illegible]	[illegible]	I	–
D-11	EUMI	103[illegible]N	F	J	[illegible]	I	–
A-4	EUMI	10[illegible]N	F	A	24	I	
A-3	EUMI	1041N	F	A	34	A	lactating

*Key taxonomic characters, physical condition of animal, etc.

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83-C.5.2.2.2-7

REPRODUCTIVE STATUS DATA SHEET

Project [illegible] Date July 1975 Investigator [illegible]

Location T3S R15W S3 [illegible] Habitat [illegible]

Capture Technique snap traps

Comments RDM 9/2/75

Species Peromyscus maniculatus

	TL	T	HF	E	grams	Inactive	Embryos R	Embryos L	Placental Scars R	Placental Scars L	Comments
A	14[illegible]	59	18	14	22g		3	2			5 mm
B	15[illegible]	65	19	14	26g		3	2			17 mm
C	139	60	19	16	30g		3	2			
D											
E											

Species Eutamias minimus

	TL	T	HF	E	grams	Inactive	Embryos R	Embryos L	Placental Scars R	Placental Scars L	Comments
A	191	85	29	14	34	x					nulliparous
B											
C											
D											
E											

Species Microtus longicaudus — attacked by ants

	TL	T	HF	E	grams	Inactive	Embryos R	Embryos L	Placental Scars R	Placental Scars L	Comments
A	14[illegible]	45	20	12	20g		3	1			2 mm.
B											
C											
D											
E											

RBOSP PROGRESS REPORT

83.C.5.2.2.2-8

REPRODUCTIVE STATUS DATA SHEET

Project 83 Date July 1975 Investigator 83

Location T15 R99W S34 NE1/4 SW1/4 Habitat GREASEWOOD - SAGE 6200'

Capture Technique SNAP-TRAP

Comments

Species Peromyscus maniculatus RDM 9/2/75

	TL	T	HF	E	grams	Inactive	Embryos R	Embryos L	Placental Scars R	Placental Scars L	Comments
A	183	76	20	17	29		3	3	2	3	3mm
B	167	70	19	17	24		2	3			
C	162	67	18	17	22				3	3	scars recent
D	164	77	20	17	29		4	4			10 mm
E	124	69	18	16	23		3	2			barely mature

Species

	TL	T	HF	E	grams	Inactive	Embryos R	Embryos L	Placental Scars R	Placental Scars L	Comments
A											
B											
C											
D											
E											

Species

	TL	T	HF	E	grams	Inactive	Embryos R	Embryos L	Placental Scars R	Placental Scars L	Comments
A											
B											
C											
D											
E											

RBOSP PROGRESS REPORT

83 C.5.2.2.2-11

REPRODUCTIVE STATUS DATA SHEET

Project 83 Date July 1975 Investigator REYES

Location T2S R99W S12 NW1/4 SE1/4 NW1/4 SE1/4 Habitat [illegible] (South facing) (6700')

Capture Technique Snap-trap

Comments

RBM 9/2/75

Species *Peromyscus maniculatus*

	TL	T	HF	E	grams	Inactive	Embryos R	Embryos L	Placental Scars R	Placental Scars L	Comments
A	177	76	19	17	27g				4	3	lactating
B	176	76	19	17	26g				3	3	lactating
C											
D											
E											

Species *Eutamias minimus*

	TL	T	HF	E	grams	Inactive	Embryos R	Embryos L	Placental Scars R	Placental Scars L	Comments
A	191	79	28	14	38g				4	3	lactating
B											
C											
D											
E											

Species

	TL	T	HF	E	grams	Inactive	Embryos R	Embryos L	Placental Scars R	Placental Scars L	Comments
A											
B											
C											
D											
E											

RBOSP PROGRESS REPORT RBOSP PROGRESS REPORT RBOSP PROGRESS REPORT

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35(.3 2.2.1.4-1

STOMACH ANALYSIS DATA SHEET

Project 83 Date July 17 75 Investigator REYES

Location T15 R79W S34 NE 1/4 SW 1/4 Habitat Greasewood - Sage

Capture Technique Snap - trap

Comments [illegible] [illegible] [illegible] empty stomachs – 2 more adults were analyzed

Species Peromyscus maniculatus

RBOSP PROGRESS REPORT ~~pmm~~ 9/22/75

	A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E
1	S	S	S	S	S	11	S	S	S	S	S	21	Su	S	S	S	S	31	S	S	S	S	S	41	S	S	S	S	S
2	S	S	S	S	Su	12	S	S	S	S	S	22	S	S	S	S	S	32	S	S	S	S	S	42	S	S	S	S	S
3	S	S	S	S	S	13	S	S	S	S	S	23	S	S	S	S	Su	33	S	S	S	S	S	43	S	S	S	S	S
4	S	S	S	S	S	14	S	S	S	S	S	24	S	S	S	S	S	34	S	S	S	S	S	44	S	S	S	S	S
5	S	S	S	S	S	15	S	S	S	S	S	25	S	S	S	S	S	35	S	S	S	S	S	45	S	S	S	S	[illegible]
6	S	S	S	S	T	16	Su	S	S	S	S	26	S	S	S	S	S	36	S	S	S	S	S	46	S	S	S	S	S
7	S	S	S	S	S	17	S	S	S	S	S	27	S	S	S	S	S	37	S	S	S	S	S	47	S	S	S	S	S
8	S	S	S	S	S	18	S	S	S	S	S	28	S	S	S	S	S	38	S	S	S	S	S	48	S	S	S	S	S
9	S	S	S	S	S	19	S	S	S	S	S	29	S	[illegible]	S	S	S	39	S	[illegible]	S	S	S	49	S	S	S	S	S
10	S	S	S	S	S	20	S	S	S	S	S	30	S	S	S	S	S	40	Su	S	S	S	S	50	S	S	S	S	S

Measurements							Food Categories				
	Sex	TL	T	HF	E	grams	-	V	I	Su	S
A	♂	[illegible]	[illegible]	[illegible]	16	27					
B	♂	152	66	20	16	16					
C	♀	122	53	22	16	11					
D	♂	170	71	17	16	26					
E	♂	155	59	17	15	20					-

(1st 2 D&F were empty [illegible] were [illegible])

Food Categories	Symbol	Total % F
Empty fields	-	
Vertebrate	V	
Invertebrate	I	
Succulent	Su	
Seed	S	

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STOMACH ANALYSIS DATA SHEET

Project 83 Date July 1975 Investigator REYES
Location T2S R100W S15 SW1/4 SW1/4 Habitat ASPEN
Capture Technique snap-trap
Comments B - stomach empty
Species Microtus longicaudus

RBOSP PROGRESS REPORT

RPM 9/2/75

	A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E
1	Su	Su	Su	Su	Su	11	Su	Su	Su	Su	Su	21	Su	Su	Su	S	Su	31	Su	S	Su	Su	Su	41	Su	S	Su	Su	Su
2	Su	Su	Su	Su	Su	12	Su	Su	Su	Su	Su	22	Su	Su	Su	Su	Su	32	Su	Su	Su	Su	Su	42	Su	Su	Su	Su	Su
3	Su	Su	Su	Su	Su	13	Su	Su	Su	Su	Su	23	Su	Su	Su	Su	Su	33	Su	Su	Su	Su	Su	43	Su	Su	Su	Su	Su
4	Su	Su	Su	Su	Su	14	Su	S	Su	Su	Su	24	Su	Su	Su	Su	Su	34	Su	S	Su	Su	Su	44	Su	Su	Su	Su	Su
5	Su	Su	Su	Su	Su	15	Su	Su	Su	Su	Su	25	Su	Su	Su	Su	Su	35	Su	Su	Su	Su	Su	45	Su	Su	Su	Su	Su
6	Su	Su	Su	S	Su	16	Su	S	Su	Su	Su	26	Su	Su	Su	Su	Su	36	Su	S	Su	Su	Su	46	Su	S	Su	Su	Su
7	Su	Su	Su	Su	Su	17	Su	Su	S	Su	Su	27	Su	Su	Su	Su	Su	37	Su	Su	Su	Su	Su	47	Su	Su	S	Su	Su
8	Su	S	Su	Su	Su	18	Su	Su	Su	Su	Su	28	Su	S	Su	Su	Su	38	Su	Su	Su	Su	Su	48	Su	Su	Su	Su	Su
9	Su	Su	Su	Su	Su	19	Su	Su	Su	Su	Su	29	Su	Su	Su	Su	Su	39	Su	S	Su	Su	Su	49	Su	Su	Su	Su	Su
10	Su	Su	Su	Su	Su	20	Su	Su	S	Su	Su	30	Su	Su	Su	Su	Su	40	Su	Su	Su	Su	Su	50	Su	Su	Su	Su	Su

	Measurements						Food Categories				
	Sex	TL	T	HF	D	grams	-	V	I	Su	S
A	♀	163	55	18	11	32					
B	♂	187	61	20	13	45					
C	♂	137	59	17	13	36					
D	♀	135	[illegible]	17	[illegible]	15					
E	♀	130	41	18	11	22					

Food Categories	Symbol	Total % F
Empty fields	-	
Vertebrate	V	
Invertebrate	I	
Succulent	Su	
Seed	S	

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STOMACH ANALYSIS DATA SHEET

Project 83 Date July 1975 Investigator Reys
Location [illegible] Habitat Pinyon-juniper (north-facing)
Capture Technique Snap-trap
Comments
Species Peromyscus maniculatus

RBOSP PROGRESS REPORT

RDM 9/2/75.

	A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E
1	S	S				11	S	S				21	S	S				31	S	S				41	S	S			
2	S	S				12	S	S				22	S	S				32	S	S				42	S	S			
3	S	S				13	S	S				23	S	S				33	S	S				43	S	S			
4	S	S				14	S	S				24	S	S				34	S	S				44	S	S			
5	S	S				15	S	S				25	S	S				35	S	S				45	S	S			
6	S	S				16	S	S				26	S	S				36	S	S				46	S	S			
7	S	S				17	S	S				27	S	S				37	S	S				47	S	S			
8	S	S				18	S	S				28	S	S				38	S	S				48	S	S			
9	S	S				19	S	S				29	S	S				39	S	S				49	S	S			
10	S	S				20	S	S				30	S	S				40	S	S				50	S	S			

	Measurements						Food Categories				
	Sex	TL	T	HF	E	grams	-	V	I	Su	S
A	♀	169	72	18	[illegible]	63					
B	♀	[illegible]	70	[illegible]	17	30					
C											
D											

Food Categories	Symbol	Total % F
Empty fields	-	
Vertebrate	V	
Invertebrate	I	
Succulent	Su	
Seed	S	

83.C3.22.14-6

STOMACH ANALYSIS DATA SHEET

ECI ecology consultants, inc.

Project 83 Date July 1975 Investigator P.EYES
Location T2S R99W NW1/4 SE1/4 Habitat Pinyon-juniper (south-facing)
Capture Technique snap trap
Comments

Species Eutamias minimus

RBOSP PROGRESS REPORT

RDm 9/2/75

	A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E
1	S					11	S					21	S					31	S					41	S				
2	S					12	S					22	S					32	S					42	S				
3	S					13	S					23	S					33	S					43	S				
4	S					14	S					24	S					34	S					44	S				
5	S					15	S					25	S					35	S					45	S				
6	S					16	S					26	S					36	S					46	S				
7	S					17	S					27	S					37	S					47	S				
8	S					18	S					28	S					38	S					48	S				
9	S					19	S					29	S					39	S					49	S				
10	S					20	S					30	S					40	S					50	S				

	Measurements						Food Categories				
	Sex	TL	T	HF	E	grams	-	V	I	Su	S
A	♀	191	77	28	14	38					
B											
C											
D											

%

Food Categories	Symbol	Total % F
Empty fields	-	
Vertebrate	V	
Invertebrate	I	
Succulent	Su	
Seed	S	%

83 C5.2.2.1.4-1

STOMACH ANALYSIS DATA SHEET

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Project 83 Date July 1975 Investigator BELLES

Location T2S R99W S12 NW1/4 SE1/4 Habitat Pinyon-juniper ([illegible])

Capture Technique snap-trap

Comments

Species Peromyscus maniculatus

RBOSP PROGRESS REPORT

RMM 9/2/75

	A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		A	B	C	D	E
1		S	Su	|		11	|	S	S	|		21		S	Su	|		31		S	S	|		41		S	Su	|	
2	|	S	Su	|		12	|	S	S	|		22		S	Su	|		32		S	S	|		42		S	Su	|	
3	|	S	Su	|		13	|	S	S	|		23		S	S	|		33		S	S	|		43		S	Su	|	
4	|	S	S	|		14	|	S	Su	|		24		S	S	|		34		S	S	|		44		S	Su	|	
5	|	S	S	|		15	|	S	Su	|		25		S	S	|		35		S	S	|		45		S	S	|	
6	|	S	Su	|		16	|	S	Su	|		26		S	S	|		36		S	Su	|		46		S	S	|	
7	|	S	S	|		17		S	S	|		27		S	Su	|		37		S	Su	|		47		S	S	|	
8	|	S	S	|		18		S	S	|		28		S	S	|		38		S	Su	|		48		S	S	|	
9	|	S	S	|		19		S	Su	|		29		S	S	|		39		S	Su	|		49		S	Su	|	
10	↓	S	S	↓		20		S	Su	↓		30		S	S	↓		40		S	S	↓		50		S	S	↓	

	Measurements						Food Categories				
	Sex	TL	T	HF	D	grams	-	V	I	Su	S
A	♂	174	71	19	14	26	—	—	—	—	—
B	♂	173	75	20	15	27					
C	♂	[illegible]	62	[illegible]	16	14					
D	♂	163	70	19	15	23	—	—	—	—	—
E											

bait only

stomach empty

Food Categories	Symbol	Total % F
Empty fields	-	
Vertebrate	V	
Invertebrate	I	
Succulent	Su	
Seed	S	

5.2.2 1.4-8

MAMMAL NIGHT ROAD CENSUS DATA AND SUMMARY SHEET

Project 83 Transect # one Date 22/23 June 75 Sunset Time ≈ 2100

Time Begun 2315 Temp. ≈ 50°F Time Completed 0400 23 June Temp. ≈ 40°F Cloud Cover 0 %

Starting Point 84 mwa 34.3 Finish Point cattle guard near 64.3 Length of Transect 30 miles

cattle road & [illegible] road

Observable Distance Estimates up to 25 meters.

RBOSP PROGRESS REPORT

KPM 9/1 (checked transcription)

Mile 1 18 ; 2 18 ; 3 18 ; 4 16 ; 5 13 ; 6 15 ; 7 18 ; 8 14 ; 9 15 ; 10 10 ;

11 12 ; 12 12 ; 13 12 ; 14 13 ; 15 12 ; 16 20 ; 17 13 ; 18 7 ; 19 12 ; 20 12 ;

21 16 ; 22 14 ; 23 10 ; 24 9 ; 25 10 ; 26 10 ; 27 15 ; 28 8 ; 29 10 ; 30 10 .

Odometer Reading	Species Observed	Habitat	Odometer Reading	Species Observed	Habitat
35.8	L. towsendii	short sage			
40.1	E. dorsatum	South shrub			
40.1	" "	" "			
54.8	Sylvilagus sp.	Sage			
55.0	Bat (hoary?)	on road			
56.0	L. towsendii	Sage			
56.7	Horses * (10)	P.J./sage			
58.7	Bats (3) (hoary)**	on road [large]			

* Horses are inventoried by other methods

** The bats appeared large and relatively light colored they might be hoary bats as R. Findley of U.S.D.I. mist netted these bats in the general vicinity of the sightings. These are also censused by other means

1. x est. dist. 12.47 m. x transect length 48,270 m. = 601,926 sq. m. of coverage.

2. sq. m. coverage / sq. m./hectare = 601,926 / 10,000 = 60.19 hectares; N = number sited / total hectares = ______/hectare.

Species	No. Sighted	Hectares Covered	Pop. Est./Hectare
L. townsendii	2	60.19	0.03
Sylvilagus sp.	1	"	0.02
E. dorsatum	2	"	0.03

5.4.2-6

MAMMAL NIGHT ROAD CENSUS DATA AND SUMMARY SHEET

Project 83 Transect # two Date 25/26 June 75 Sunset Time ± 2100

Time Begun 2325 Temp. ± 40 °F Time Completed 0430 26 June Temp. ± 40°F Cloud Cover 0 %

Starting Point 34.7 84 mesa as delineated in scope of work Finish Point 64.7 cath road & corral gulch Length of Transect 30 mi

Observable Distance Estimates up to 25 meters. same as from 22 June, 1975 (Rim 8/1 checked transcript)

RBOSP PROGRESS REPORT

Mile 1____; 2____; 3____; 4____; 5____; 6____; 7____; 8____; 9____; 10____;

11____; 12____; 13____; 14____; 15____; 16____; 17____; 18____; 19____; 20____;

21____; 22____; 23____; 24____; 25____; 26____; 27____; 28____; 29____; 30____.

Odometer Reading	Species Observed	Habitat	Odometer Reading	Species Observed	Habitat
47.1	Bat ** (large)	sage			
48.8	Horse *	P.J. /Sage			
49.7	L. towsendii	meadow, on bluffs			
55.8	L. towsendii	sage			
56.3	Horses *	P.J. /Sage			
56.4	Sylvilagus sp.	" "			
56.6	Horses * (11)	" "			
63.9	Sylvilagus sp	Pinyon / Juniper			
64.2	Sylvilagus sp	" "			

*; ** see comments on mammal night road census data sheet for 22/23 June 75

1. $\overline{x}$ est. dist. 12.47 m. x transect length 1609 m. = 20064.23 sq. m. of coverage.

2. $\frac{\text{sq. m. coverage}}{\text{sq. m./hectare}} = \frac{20064.23}{10{,}000} =$ 2.01 hectares; $N = \frac{\text{number sited}}{\text{total hectares}} =$ ______/hectare.

Species	No. Sighted	Hectares Covered	Pop. Est./Hectare
L. towsendii	2	2.01	0.03
Sylvalagus sp.	3	"	0.05

File No. 83.C.5 5.2-1

BAT MIST NET SAMPLING SHEET

Collector(s) Turner/Baker Date 6/17/75 Project 83

Location: T 2S R 93W S 9 1/4 1/4 S NW/SE Time Net Set 8:30 pm

Description Water tank QA Check RDM 7/17

Time Net Checked	Species	Sex	Comments (condition, collection, release, etc.)
900	—		
915	0005 Myotis evotis wt. 5gm	♀	voucher specimen [illegible]
930	—		in lab.
945	0004 Myotis sp. (leibii) wt 3g.	♀	"
1000	0003 Myotis sp (leibii) - 3g	♀	"
1010	Myotis sp - 0001 (leibii) 3g	♂	released - same sp as prev. myotis sp
	= 0004, 0003		
1025	Myotis evotis 0002 5g.	♂	voucher
1105	0010 Myotis evotis 5g	♀	released
Net	was checked continously		from 8-30 Til 11:45.
at	11:45 wind picked	up	and it started raining -
	as a result bat activity		was greatly curtailed and
	the net was taken down		

File No. 83.C.552-2

BAT MIST NET SAMPLING SHEET

Collector(s) Turner/Baker Date 6/19/75 (Night 2) Project 83

Location: T 15 R 93 W S 7 1/4 1/4 S SW/NW Time Net Set 830 pm

Description Windmill tank - Duck Creek QA Check [illegible] 7/-

Time Net Checked	Species	Sex	Comments (condition, collection, release, etc.)
traps	checked continuously	til	930
1030	——— No bats		
1045	——— no bats		
11:00	Myotis evotis 0020 5.5 gm	♀	marked and released
11:15	——— no bats		
no	bat activity at 11:15	- net	pulled
very	cool night - little	insect or	bat activity

File No. 83 C 5.5.2-3

BAT MIST NET SAMPLING SHEET

Collector(s) Turner | Baker Date 6/17/75 Night 3 Project 33

Location: T 25 R 98W S 9? 1/4 1/4 SNW/SE Time Net Set 910 pm

Description H_2O tank near [illegible] school QA Check

Net checked continuously

Time Net Checked	Species	Sex	Comments (condition, collection, release, etc.)
2115	Myotis evotis	♂	0030 released ear 19mm
2125	Nighthawk		
2130	M. leibii	♂	0040 ft. 7mm tibia 2? release
2135	M. leibii	♀	0050 ft. 7mm [illegible]
2145	M. evotis	♀	0021
2225	M. evotis	♀	0011 ✓
AFTER	2235 NO BATS SEEN		- NET PULLED 2300
Cool, clear night			

File No. BC33.2-16

BAT MIST NET SAMPLING SHEET

Collector(s) Steve Baker Date 11 August Project 83

Location: T 25 R 99W S 15 1/4 1/4 S SW/SE Time Net Set 2015

Description House at Stake Spring w/ stock tank and outside light QA Check RDM 8/22

Time Net Checked	Species	Sex	Comments (condition, collection, release, etc.)
NO	CAPTURES		
	Many bats seen flying, large ones (not Myotis		spp.).
	as well as smaller		ones. By 1300 activity
	had stopped.		

File No. 83C552-18

BAT MIST NET SAMPLING SHEET

Collector(s) [illegible]
Date [illegible]
Project [illegible]

Location: T 2S R [illegible] S 9 1/4 1/4 S NE/SE Time Net Set 2200

Description [illegible]
QA Check RBM 9/22

Time Net Checked	Species	Sex	Comments (condition, collection, release, etc.)
2330	Eptesicus fuscus (?) ~~Myotis~~ [illegible]	[illegible]	[illegible] positive ID Eptesicus fuscus by R. Finley. Data sheet corrected 5-26-7 bmn. Voucher on hand.
2345	Myotis evotis	[illegible]	[illegible]

File No. BC332-21

BAT MIST NET SAMPLING SHEET

Collector(s) [illegible] Date 17 Aug 75 Project 82

Location: T 2S R 28W S 9 1/4 1/4 S NENE Time Net Set 2020

Description Stock tank near [illegible] Pond QA Check RMM 9/22

Time Net Checked	Species	Sex	Comments (condition, collection, release, etc.)
2050	Myotis evotis	♂	released
2120	" "	♀	"
2140	" leibii	♂	"
2257	" sp.	♀	same sp. as collected 15 Aug. relea
2257	" leibii	♀	released
2352	" californicus	♀	"
2352	" californicus	♂	"

2.3.7 Avifauna

TN
859
.C64
R564
no.4
sec 2.3.7-2.3.12

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

TN
859
.C64
R564
no.4
sect 2.3.7-2.3.12

2.3.7 Avifauna

2.3.7.1 Introduction

No change has occurred since Progress Report-2. See section 3.9.1 in Progress Report-2 for the introduction to the avifauna section.

2.3.7.2 Methods

2.3.7.2.1 General Avifauna

Quantitative censuses of bird species residing in or utilizing major vegetation types on Tract C-a and adjacent areas commenced in early October, 1974 and continue through August, 1976. During 9 field periods (October, December, 1974; February, April, June, October, 1975; February, April, June, 1976) 15 separate censuses are conducted. All routes except a riparian transect either start at or traverse one of the 14 small mammal live trapping grids (Figure 2.3-11).

The Emlen strip census procedure (Emlen, 1971) is being used to provide data from which bird densities can be calculated. Censuses are conducted during a 3.5 hour period immediately after sunrise and a similar period before sunset during each day of every sampling period. The technique consists of walking through a strip approximately 800 m (2,624 ft) long and 244 m (800 ft) wide and recording all individual birds seen and heard, by species, according to their perpendicular distance from the transect on a standard field data form (Figure 2.3-21). The length of each transect is determined by measuring the route plotted on USGS topographic maps and converting the length to meters. A hand-held rangefinder is used initially to verify perpendicular density estimates.

These distances are later used to calculate species coefficients of detectability, an adjustment factor necessary to provide more accurate density estimates for all species observed. A basal detectability adjustment factor is used to aid in the determination of population estimates for species in which a sizeable segment of the population is not readily detectable by the observer. In accordance with Emlen's (1971) theses the basal adjustment used for wintering populations was x1.2 and for breeding populations with intermittently inactive females, a factor of x1.5 was used. Additional field experience may lead to further refinements in these adjustment factors.

While the Emlen technique provides data on species utilizing the surveyed areas, it does not identify the full range of species expected throughout the entire area of investigation. Past experience and information obtained from this and other ECl research projects in the Piceance Basin suggest that the bird species inventory may be very incomplete if sole reliance is placed upon the relatively few Emlen censuses which can be performed at dusk.

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date:__________ **Observer:**__________ **Site:**__________

Times:__________ **Temp.:**__________ **Wind:**__________ **Sky:**__________

Project:__________ **Other Comments:**__________

____

Number Recorded Per Strip

Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over

Figure 2.3- Emlen strip census field data sheet for RBOSP.

Therefore, standardized qualitative count surveys are used to indicate and document the bird species inhabiting the major variants of predominant vegetation types. Such surveys are conducted during each general avifauna sampling period. A qualitative count survey consists of walking a route in a given vegetation type approximately 250 m (820 ft) long and recording all birds encountered, by species and numbers, on a field data form (Figure 2.3-22). Quantification in these surveys is less rigorous than for standard Emlen transects and they may be run in daytime periods of low bird activity. Thus quantitative comparisons between these qualitative surveys or with Emlen transect data are not usually reliable. Nonetheless, the qualitative surveys serve important functions in more adequately assessing species diversity in each vegetation type and providing a more complete qualitative picture of bird species distribution.

When an active nest is discovered during any field activity, the nest is examined and the species, nest type, nest substrate, rim height of nest, and nest location in relation to nearby landmarks are recorded on a field data sheet (Figure 2.3-23). The number of eggs and/or nestlings present and estimated age of nestlings, based on criteria presented by the Western Bird Banding Association's banding work sheets, are also recorded. These data will indicate specific habitat preferences of bird species found nesting in the study area.

Emlen strip surveys are not interrupted to obtain data on nests. This reduces the possibility of recording birds already tallied. Rather, the nest's location is marked with surveyor's flagging tape and examined after the Emlen survey is completed.

2.3.7.2.2 Upland Gamebirds

No change has occurred since Progress Report 2. See section 3.9.2.2 in Progress Report 2 for specific methods used in upland gamebird surveys.

2.3.7.2.3 Waterfowl

No change has occurred since Progress Report 2. See section 3.9.2.3 in Progress Report 2 for specific methods used in waterfowl surveys.

2.3.7.2.4 Raptors

2.3.7.2.4.1 Aerial Surveys

Low level aerial surveys are being conducted to determine relative abundance and distribution of raptors utilizing or residing in the vicinity of Tract C-a. These flights were initiated in November, ECI ecology consultants, inc.

QUALITATIVE AVIAN RECORD

Date______________ Observer______________ Project______________

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind

Figure 2.3-22. Qualitative avian record field data sheet for RBOSP

AVIAN NESTING RECORD

Species______________ **Site**______________ **Nest No.**______

Date__________ **Observer**______________ **Project**______

Nest Location

Nest Type______________

Substrate______________

Rim height (cm)______________

Comments:

← Sketch in nest location relative to identifiable landscape features, grid system, or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments

Summary: Clutch size__________ Completed?__________ Date Incubation Started__________

Young Hatched__________ Hatching Date__________

Young Fledged__________ Fledging Date__________

Nest Destroyed?__________ Date__________ Cause______________

Figure 2.3-23. Avian nesting record field data sheet for RBOSP.

1974 and continue in conjunction with mule deer, elk, feral horse, and domestic livestock aerial surveys scheduled bimonthly. Flights employ a high-winged aircraft designed to permit slow flight speeds at low levels above the ground. The plane is flown along standardized transects at an indicated air speed of 137.1 - 153.2 km (85 - 95 mi) per hour, and approximately 60 m (196.8 ft) above the ground, safety permitting. During each census flight, the flight paths (transects), speed and altitude of the aircraft are duplicated as much as weather conditions will allow.

Portable tape recorders are used to record information during the census. This allows continuous observation of the transect. Raptors seen by the pilot and two observers (positioned on opposite sides of the plane) are identified to species, location, and when possible, age class. Prior to the initiation of the census, each observer identifies the category of information to be recorded (i.e., Aerial Raptor Survey), the date, area to be surveyed, observer's name and observation position in the aircraft, the name and position of the other observer, name of pilot and make of aircraft on the tape. Weather conditions such as temperature, estimated wind speed and direction, and cloud cover are also recorded. The time is recorded at the beginning of the first transect and at the end of the last transect. The information recorded on the tape is transcribed by each observer onto a standard aerial raptor census report and summary form (Figure 2.3-24).

Aerial surveys cover Tract C-a and adjacent areas (Figure 2.3-25). Each aerial survey consists of fourteen 17.7 km (11 mi) transects and systematically covers Tract C-a and adjacent areas. Odd numbered transects are flown from north to south and even numbered transects are flown in the opposite direction. Each successive pass is flown approximately 1.6 km (1.0 mi) from the previous transect, as mapped.

Although raptor surveys occur in conjunction with mule deer, elk, feral horse and domestic livestock aerial surveys, they are initiated separately to assure total coverage of the survey area and to allow thermals, which are utilized by raptors for soaring and hunting, to develop. At times censuses may be postponed or terminated due to adverse weather (low overcast, high winds, rain, snow, etc.). If a survey is aborted, it is conducted in its entirety as soon as weather conditions become more favorable.

2.3.7.2.4.2 Ground Surveys

No change has occurred since Progress Report 2. See section 3.9.2.4.2 in Progress Report 2 for specific methods used in raptor ground surveys.

AERIAL RAPTOR CENSUS REPORT AND SUMMARY FORM

Project/Study__________ Date Flown______________ Survey Area__________________________

Observers: R________________ L________________ Pilot/Aircraft_______________________

Time: Start________ Finish_________ Est. Ground Speed___________ Altitude____________

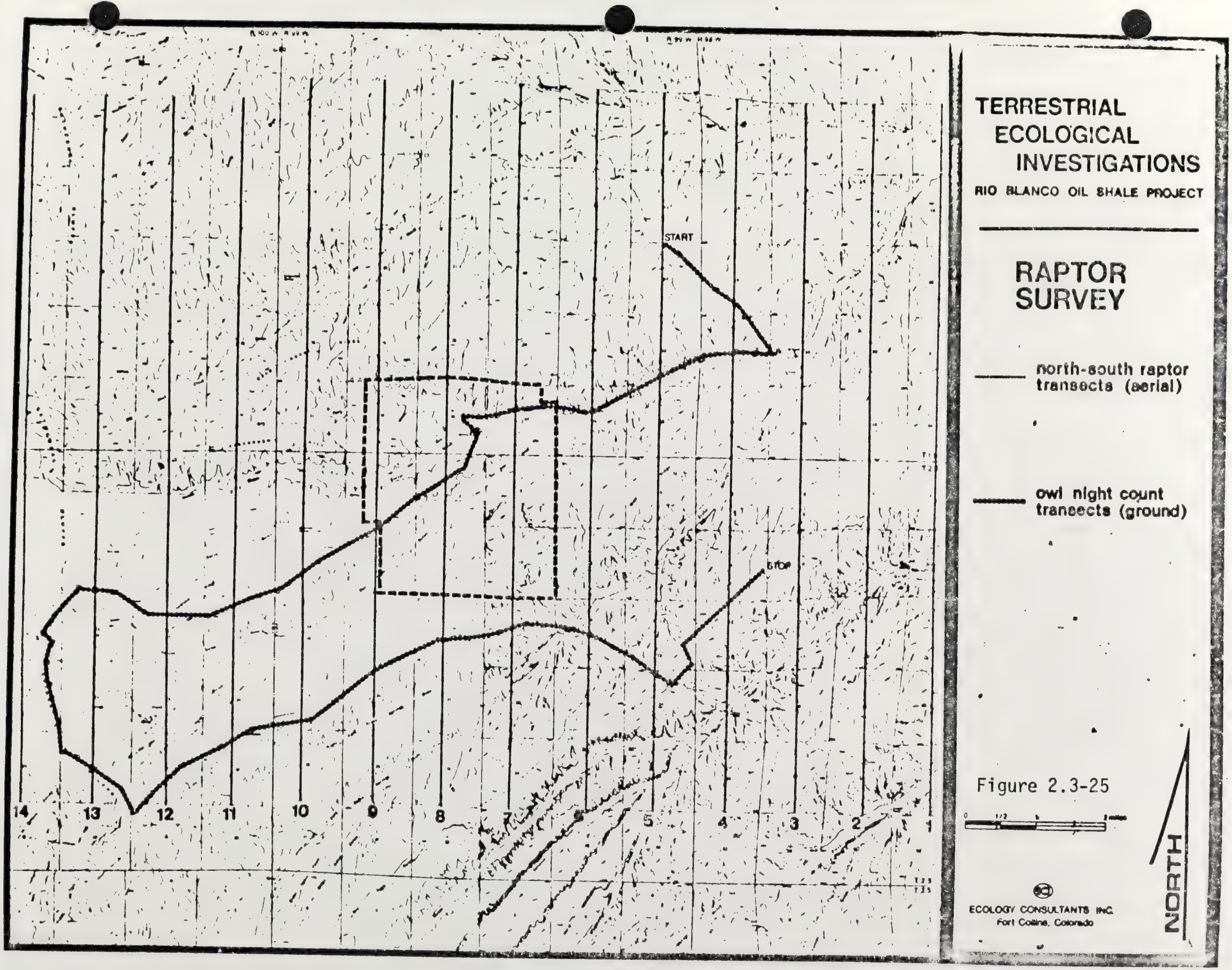
Weather: Temperature________ Wind___________ Percent Cloud Cover____________________

Air___________________ Light__________________ Analyst______________________________

Species	Number			Location			Notes and Comments
	Adlt.	Imm.	Unkn	Section	Town.	Range	

ECI
ecology consultants, inc.

Figure 2.3-24. Aerial raptor census report and summary form for RBOSP.



TERRESTRIAL ECOLOGICAL INVESTIGATIONS
RIO BLANCO OIL SHALE PROJECT

RAPTOR SURVEY

Figure 2.3-25

north-south raptor transects (aerial)
owl night count transects (ground)
START
STOP
1
2
3
4
5
6
7
8
9
10
11
12
13
14
0
1/2
1
2 miles
NORTH
ECOLOGY CONSULTANTS INC.
Fort Collins, Colorado

2.3.7.3 Results

2.3.7.3.1 General Avifauna

Eleven different vegetation types in fifteen separate locations were sampled during June, 1975 by Emlen strip censuses (Emlen, 1971). Emlen strip transect locations, representing a variety of different slope aspects and elevations generally correspond to the small mammal live-trap grids. The quantitative population estimates of avifauna species provided by the Emlen census were supplemented by qualitative "walk-through" surveys conducted within the various habitat types on the study area. Dr. John Wiens from Oregon State University was consulted in the determination of the coefficients of detectability and basal adjustment factor for all the avian species encountered during Emlen censuses.

Because species on some grids were represented by only one or two observations, their coefficients of detectability and resulting population density estimates may be unreliable. Also, the highly mobile nature of raptors and their lack of habitat preferences for activities other than nesting may preclude reliable density estimates for these species as well. However, the increasing data base resulting from continued Emlen strip sampling may permit more reliable estimates of population density for all species in the future.

Ninety-six bird species were tallied during all avian census activities conducted during the summer field period. A total of 127 avian species has been tallied since the initiation of field sampling and these species are listed in Table 2.3-151.

2.3.7.3.1.1 Aspen (Transect #14)

One Emlen strip transect was surveyed in a single aspen stand (northern slope/8100') during June, 1975. A total of 34 birds representing seventeen different species was recorded for the aspen type during this survey (Table 2.3-152). The broad-tailed hummingbird, ruby-crowned kinglet and mountain chickadee were the most abundant species observed. The ruby-crowned kinglet is a common nester of the Colorado sub-alpine zone. Its nests are usually found in evergreens, but they are also occasionally found in the high altitude deciduous forests (Bent, 1964; Davis, 1969). The broad-tailed hummingbird and mountain chickadee are typical summer residents of the aspen community in western Colorado and eastern Utah (Twomey, 1942; Bailey and Niedrach, 1965). The black-capped chickadee is the only species recorded during this survey that has been observed throughout the year.

2.3.7.3.1.2 Douglas Fir (Transect #13)

Thirteen avian species were recorded within the Douglas fir transect (northern slope/8200') during June. All species observed were

Table 2.3- 151. Species of birds observed during field investigations to date in the vicinity of Tract C-a for RBOSP[1/]

ORDER FAMILY Species	Common Name
CICONIIFORMES	
ARDEIDAE	
Ardea herodias	Great blue heron
CICONIIDAE	
Plegadis chihi	White-faced ibis
ANSERIFORMES	
ANATIDAE	
Anas platyrhynchos	Mallard
Anas strepera	Gadwall
Anas crecca	Green-winged teal
Anas discors	Blue-winged teal
Anas cyanoptera	Cinnamon teal
Aythya americana	Redhead
FALCONIFORMES	
CATHARTIDAE	
Cathartes aura	Turkey vulture
ACCIPITRIDAE	
Accipiter gentilis	Goshawk
Accipiter striatus	Sharp-shinned hawk
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	Red-tailed hawk
Buteo swainsoni	Swainson's hawk
Buteo lagopus	Rough-legged hawk
Aquila chrysaetos	Golden eagle
Haliaeetus leucocephalus	Bald eagle
Circus cyaneus	Marsh hawk
FALCONIDAE	
Falco mexicanus	Prairie falcon
Falco peregrinus	Peregrine falcon
Falco sparverius	American kestrel

Table 2.3-151. (Continued)

ORDER FAMILY Species	Common Name
GALLIFORMES	
TETRAONIDAE	
Dendragapus obscurus	Blue grouse
Centrocercus urophasianus	Sage grouse
GRUIFORMES	
GRUIDAE	
Grus canadensis tabida	Greater sandhill crane
RALLIDAE	
Rallus limicola	Virginia rail
Porzana carolina	Sora
CHARADRIIFORMES	
CHARADRIIDAE	
Charadrius semipalmatus	Semipalmated plover
Charadrius vociferus	Killdeer
SCOLOPACIDAE	
Capella gallinago	Common snipe
Actitis macularia	Spotted sandpiper
Actitis macularia	Solitary sandpiper
Tringa flavipes	Lesser yellowlegs
RECURVIROSTRIDAE	
Recurvirostra americana	American avocet
PHALAROPODIDAE	
Steganopus tricolor	Wilson's phalarope
COLUMBIFORMES	
COLUMBIDAE	
Zenaida macroura	Mourning dove
STRIGIFORMES	
STRIGIDAE	
Otus asio	Screech owl
Bubo virginianus	Great horned owl
Glaucidium gnoma	Pygmy owl
Asio flammeus	Short-eared owl

Table 2.3-151. (Continued)

ORDER FAMILY Species	Common Name
CAPRIMULGIFORMES	
CAPRIMULGIDAE	
Phalaenoptilus nuttallii	Poor-will
Chordeiles minor	Common night hawk
APODIFORMES	
APODIDAE	
Aeronautes saxatalis	White-throated swift
TROCHILIDAE	
Selasphorus platycercus	Broad-tailed hummingbird
PICIFORMES	
PICIDAE	
Colaptes auratus	Common flicker
Dendrocopos pubescens	Downy woodpecker
PASSERIFORMES	
TYRANNIDAE	
Sayornis saya	Say's phoebe
Empidonax hammondii	Hammond's flycatcher
Empidonax wrightii	Gray flycatcher
Contopus sordidulus	Western wood pewee
ALAUDIDAE	
Eremophila alpestris	Horned lark
HIRUNDINIDAE	
Tachycineta thalassina	Violet-green swallow
Iridoprocne bicolor	Tree swallow
Stelgidopteryx ruficollis	Rough-winged swallow
Hirundo rustica	Barn swallow
Petrochelidon pyrrhonota	Cliff swallow

Table 2.3-151. (Continued)

ORDER FAMILY Species	Common Name
PASSERIFORMES (Continued)	
CORVIDAE	
Cyanocitta stelleri	Steller's jay
Aphelocoma coerulescens	Scrub jay
Pica pica	Black-billed magpie
Corvus corax	Common raven
Corvus brachyrhynchos	Common crow
Gymnorhinus cyanocephalus	Pinyon jay
Nucifraga columbiana	Clark's nutcracker
PARIDAE	
Parus atricapillus	Black-capped chickadee
Parus gambeli	Mountain chickadee
Parus inornatus	Plain titmouse
Psaltriparus minimus	Bushtit
SITTIDAE	
Sitta carolinensis	White-breasted nuthatch
Sitta canadensis	Red-breasted nuthatch
Sitta pygmaea	Pygmy nuthatch
CERTHIIDAE	
Certhia familiaris	Brown creeper
TROGLODYTIDAE	
Troglodytes aedon	House wren
Salpinctes obsoletus	Rock wren
MIMIDAE	
Oreoscoptes montanus	Sage thrasher
TURDIDAE	
Turdus migratorius	American robin
Catharus guttata	Hermit thrush
Sialia currucoides	Mountain bluebird
Myadestes townsendii	Townsend's solitaire

Table 2.3- 151. (Continued)

ORDER FAMILY Species	Common Name
PASSERIFORMES (Continued)	
SYLVIIDAE	
Polioptila caerulea	Blue-gray gnatcatcher
Regulus calendula	Ruby-crowned kinglet
MOTACILLIDAE	
Anthus spinoletta	Water pipit
BOMBYCILLIDAE	
Bombycilla cedrorum	Cedar waxwing
LANIIDAE	
Lanius excubitor	Northern shrike
Lanius ludovicianus	Loggerhead shrike
STURNIDAE	
Sturnus vulgaris	Starling
VIREONIDAE	
Vireo vicinior	Gray vireo
Vireo solitarius	Solitary vireo
Vireo olivaceus	Red-eyed vireo
Vireo gilvus	Warbling vireo
PARULIDAE	
Vermivora peregrina	Tennessee warbler
Vermivora celata	Orange-crowned warbler
Vermivora virginiae	Virginia's warbler
Dendroica petechia	Yellow warbler
Dendroica coronata	Yellow-rumped warbler
Dendroica nigrescens	Black-throated gray warbler
Oporornis tolmiei	MacGillivray's warbler
PLOCEIDAE	
Passer domesticus	House sparrow

Table 2.3-151. (Continued)

ORDER FAMILY Species	Common Name
PASSERIFORMES (Continued)	
ICTERIDAE	
Dolichonyx oryzivorus	Bobolink
Sturnella neglecta	Western meadowlark
Agelaius phoeniceus	Red-winged blackbird
Euphagus cyanocephalus	Brewer's blackbird
Molothrus ater	Brown-headed cowbird
THRAUPIDAE	
Piranga ludoviciana	Western tanager
FRINGILLIDAE	
Pheucticus melanocephalus	Black-headed grosbeak
Carpodacus cassinii	Cassin's finch
Carpodacus mexicanus	House finch
Leucosticte australis	Brown-capped rosy finch
Spinus pinus	Pine siskin
Loxia curvirostra	Red crossbill
Chlorura chlorura	Green-tailed towhee
Pipilo erythrophthalmus	Rufous-sided towhee
Calamospiza melanocorys	Lark bunting
Ammodramus savannarum	Grasshopper sparrow
Ammodramus bairdii	Baird's sparrow
Pooecetes gramineus	Vesper sparrow
Chondestes grammacus	Lark sparrow
Amphispiza belli	Sage sparrow
Junco hyemalis	Dark-eyed junco
Junco caniceps	Gray-headed junco
Spizella arborea	Tree sparrow
Spizella passerina	Chipping sparrow
Spizella breweri	Brewer's sparrow

Table 2.3-151. (Continued)

ORDER FAMILY Species	Common Name
PASSERIFORMES (Continued)	
FRINGILLIDAE (Continued)	
Zonotrichia leucophrys	White-crowned sparrow
Passerella iliaca	Fox sparrow
Melospiza melodia	Song sparrow
Calcarius mccownii	McCown's longspur
Calcarius ornatus	Chestnut-collared longspur
Plectrophenax nivalis	Snow bunting

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[1] The following authorities are used for bird nomenclature:

American Ornithologists' Union. 1957. Checklist of North American Birds, Fifth edition. Port City Press, Baltimore, Maryland. 691 pages.

American Ornithologists' Union. 1973. Thirty-second supplement to the American Ornithologists' Union checklist of North American Birds (Fifth edition, 1957). Auk 90:411-419.

Table 2.3-152. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 14, aspen, during each sampling period conducted for RBOSP

	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
Species	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/h
BLUE GROUSE	1	0.06	1.0	1.64	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	0.50	1.0	0.4
GREAT HORNED OWL	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.1
WHITE-THROATED SWIFT	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.2
BROAD-TAILED HUMMINGBIRD	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	3	0.09	1.5	4.9
COMMON FLICKER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	1	1.00	1.0	0.10	2	1.00	1.0	0.2
DOWNY WOODPECKER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	1	1.00	1.0	0.10	1	1.00	1.0	0.1
COMMON RAVEN	0	**	**	0.00	-	--	--	----	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.0
BLACK-CAPPED CHICKADEE	1	0.25	1.0	0.41	-	--	--	----	5	0.31	1.0	1.64	3	0.13	1.0	2.46	3	0.19	1.0	1.6
MOUNTAIN CHICKADEE	5	0.16	1.0	3.28	-	--	--	----	0	**	**	0.00	14	0.25	1.0	5.74	2	0.06	1.0	3.2
HOUSE WREN	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.25	1.0	0.4
RUBY-CROWNED KINGLET	1	0.25	1.2	0.49	-	--	--	----	0	**	**	0.00	0	**	**	0.00	3	0.09	1.5	4.9
WARBLING VIREO	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	5	0.21	1.0	2.4
TENNESSEE WARBLER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	3	0.19	1.0	1.6
ORANGE-CROWNED WARBLER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.06	1.5	2.4
MACGILLIVRAY'S WARBLER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.06	1.0	1.6
BLACK-HEADED GROSBEAK.	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	0.13	1.0	1.6
GREEN-TAILED TOWHEE	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.13	1.0	0.8
RUFOUS-SIDED TOWHEE	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.13	1.5	1.2
DARK-EYED JUNCO	0	**	**	0.00	-	--	--	----	0	**	**	0.00	3	0.25	1.0	1.25	0	**	**	0.0
GRAY-HEADED JUNCO	6	0.19	1.0	3.28	-	--	--	----	0	**	**	0.00	12	0.50	1.0	2.46	0	**	**	0.0

** Insufficient data for computation

-- Transect not sampled due to adverse weather conditions

able 2.3-153. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 13, Douglas fir, during each sampling period conducted for RBOSP

	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
Species	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
LUE GROUSE	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.06	1.0	1.64
OWNY WOODPECKER	1	1.00	1.0	0.10	-	--	--	----	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
AMMOND'S FLYCATCHER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	3	0.25	1.0	1.23
TELLER'S JAY	0	**	**	0.00	-	--	--	----	3	0.50	1.0	0.62	1	0.25	1.0	0.41	4	0.17	1.0	2.46
OMMON RAVEN	1	1.00	1.0	0.10	-	--	--	----	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
LACK-CAPPED CHICKADEE	0	**	**	0.00	-	--	--	----	16	0.29	1.0	5.74	4	0.17	1.0	2.46	0	**	**	0.00
OUNTAIN CHICKADEE	0	**	**	0.00	-	--	--	----	34	0.28	1.0	12.30	7	0.15	1.0	4.92	4	0.13	1.0	3.28
ED-BREASTED NUTHATCH	0	**	**	0.00	-	--	--	----	19	0.16	1.0	12.30	3	0.19	1.0	1.64	4	0.13	1.0	3.28
YGMY NUTHATCH	0	**	**	0.00	-	--	--	----	3	0.13	1.2	2.95	0	**	**	0.00	0	**	**	0.00
OUSE WREN	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	3	0.19	1.0	1.64
OBIN	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	3	0.38	1.0	0.82
ERMIT THRUSH	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	4	0.33	1.5	1.85
UBY-CROWNED KINGLET	3	0.25	1.2	1.48	-	--	--	----	0	**	**	0.00	0	**	**	0.00	4	0.25	1.5	2.46
ASSIN'S FINCH	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.13	1.0	0.82
INE SISKIN	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	5	0.16	1.0	3.23
ED CROSSBILL	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	3	0.13	1.5	3.69
ARK-EYED JUNCO	3	0.19	1.0	1.64	-	--	--	----	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
RAY-HEADED JUNCO	13	0.33	1.0	4.10	-	--	--	----	0	**	**	0.00	0	**	**	0.00	4	0.17	1.0	2.46

* Insufficient data for computation
- Transect not sampled due to adverse weather conditions

present in low numbers. Red crossbills, pine siskins, red-breasted nuthatches and mountain chickadees however, were more numerous than other avian species recorded in this vegetation type during June. These four species are generally associated with coniferous forests (Twomey, 1942; Bailey and Niedrach, 1965); the red-breasted nuthatch, mountain chickadee and Steller's jay are the only species observed during the June Douglas fir avian census that were also recorded during the spring and winter (Table 2.3-153).

2.3.7.3.1.3 Upland Meadow (Transect #7)

The upland meadow vegetation type (flat/8500') was surveyed once during June, 1975. Species diversity and overall summer density were relatively low; twenty birds representing seven species were recorded (Table 2.3-154). Nine horned larks were observed during this census period. The horned lark is a very common nesting species of Colorado prairies and meadows (Bailey and Niedrach, 1965; Davis, 1969), and is the only species recorded during the June census that occurs year round within this vegetation type.

2.3.7.3.1.4 Mixed Brush (Transect #5)

Five different avian species were recorded during the Emlen strip census in the mixed brush vegetation type (northern slope/7200') during June. Five species, the white-throated swift, broad-tailed hummingbird, house wren, blue-gray gnatcatcher and green-tailed towhee, were recorded in low numbers during June (Table 2.3-155).

2.3.7.3.1.5 Mixed Brush (Transect #12)

Twenty-five individual birds representing eight different species were recorded on the southern slope (8300') mixed brush, Emlen strip transect (Table 2.3-156). Thirty-two percent of all individuals encountered were Brewer's sparrows and another 44 percent were vesper sparrows, green-tailed towhees and MacGillivray's warblers.

Species diversity and overall population densities were slightly higher within the southern slope mixed brush transect (#12) in comparison with the northern slope mixed brush type (Transect #5). The difference in structural appearance (physiognomy) and microenvironments of both variants of the mixed brush type may contribute somewhat to this result. The number of vegetative strata comprising a woodland is normally an important determinant of bird species diversity (Bond, 1957; Hilden, 1965). Although the southern slope mixed brush stand is not as dense as the northern slope stand, its shrubs are larger, and therefore may provide more strata for avian utilization. A lot of microenvironmental variation also exists between the two transects due to differences in aspect and elevation. Odum (1959) has recorded variations in species composition and distribution due to microenvironmental differences between north slope and south slope variants of a habitat type.

able 2.3-154. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 7, upland meadow, during each sampling period conducted for RBOSP

	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
Species	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
MERICAN KESTREL	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
ORNED LARK	4	0.25	1.0	1.64	-	--	--	----	0	**	**	0.00	3	1.00	1.0	0.31	9	1.00	1.0	0.92
OUNTAIN BLUEBIRD	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
REEN-TAILED TOWHEE	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.25	1.0	0.41
ESPER SPARROW	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	3	0.19	1.0	1.64
REWER'S SPARROW	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	0.13	1.0	1.64
HITE-CROWNED SPARROW	2	0.13	1.0	1.64	-	--	--	----	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
HESNUT-COLLARED LONGSPUR	1	0.13	1.0	0.82	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	0.13	1.0	1.64

** Insufficient data for computation

-- Transect not sampled due to adverse weather conditions

able 2.3-155. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 5, mixed brush, during each sampling period conducted for RBOSP

	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
Species	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
HITE-THROATED SWIFT	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
ROAD-TAILED HUMMINGBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.25	1.5	1.23
LACK-BILLED MAGPIE	0	**	**	0.00	18	1.00	1.0	1.85	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
OMMON RAVEN	0	**	**	0.00	2	1.00	1.0	0.21	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
OUNTAIN CHICKADEE	2	0.25	1.0	0.82	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
OUSE WREN	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	1.00	1.0	0.31
LUE-GRAY GNATCATCHER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.06	1.0	3.28
ORTHERN SHRIKE	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00
REEN-TAILED TOWHEE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.38	1.0	0.82
RAY-HEADED JUNCO	5	0.31	1.0	1.64	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00

* Insufficient data for computation

Table 2.3-156. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 12, mixed brush, during each sampling period conducted for RBOSP

Species	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
MARSH HAWK	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
COMMON FLICKER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
STELLER'S JAY	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.1
COMMON RAVEN	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
MOUNTAIN BLUEBIRD	0	**	**	0.00	-	--	--	----	0	**	**	0.00	2	0.25	1.0	0.82	0	**	**	0.0
MACGILLIVRAY'S WARBLER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	0.06	1.0	3.2
BLACK ROSY FINCH	0	**	**	0.00	-	--	--	----	13	0.25	1.0	5.33	0	**	**	0.00	0	**	**	0.0
BROWN-CAPPED ROSY FINCH	0	**	**	0.00	-	--	--	----	7	0.25	1.0	2.87	0	**	**	0.00	0	**	**	0.0
GREEN-TAILED TOWHEE	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	4	0.13	1.0	3.2
VESPER SPARROW	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	5	0.25	1.5	3.0
DARK-EYED JUNCO	20	0.13	1.0	16.40	-	--	--	----	0	**	**	0.00	0	**	**	0.00	0	**	**	0.0
GRAY-HEADED JUNCO	40	0.13	1.0	32.80	-	--	--	----	0	**	**	0.00	10	0.16	1.0	6.56	0	**	**	0.0
BREWER'S SPARROW	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	8	0.20	1.0	4.1
SNOW BUNTING	0	**	**	0.00	-	--	--	----	32	0.50	1.0	6.56	0	**	**	0.00	0	**	**	0.0

** Insufficient data for computation
-- Transect not sampled due to adverse weather conditions

'able 2.3-157. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 10, pinyon-juniper (north slope), during each sampling period conducted for RBOSP

	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
Species	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
OLDEN EAGLE	0	**	**	0.00	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
ROAD-TAILED HUMMINGBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.13	1.5	1.23
OMMON FLICKER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	1.00	1.0	0.31
RAY FLYCATCHER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.50	1.0	0.41
CRUB JAY	0	**	**	0.00	5	1.00	1.0	0.51	2	1.00	1.0	0.21	0	**	**	0.00	0	**	**	0.00
LACK-BILLED MAGPIE	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
OUNTAIN CHICKADEE	4	0.17	1.0	2.46	0	**	**	0.00	9	0.19	1.0	4.92	0	**	**	0.00	2	0.06	1.0	3.28
LAIN TITMOUSE	0	**	**	0.00	0	**	**	0.00	4	0.17	1.0	2.46	0	**	**	0.00	0	**	**	0.00
ED-BREASTED NUTHATCH	0	**	**	0.00	0	**	**	0.00	10	0.42	1.0	2.46	0	**	**	0.00	0	**	**	0.00
OUNTAIN BLUEBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.50	1.0	0.62
UBY-CROWNED KINGLET	1	0.06	1.2	1.97	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
OLITARY VIREO	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.25	1.0	0.41
LACK-THROATED GRAY WARBLER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	8	0.33	1.0	2.46
ROWN-HEADED COWBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
REEN-TAILED TOWHEE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.25	1.0	0.82
RASSHOPPER SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.25	1.0	0.41
RAY-HEADED JUNCO	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.13	1.0	0.82
HIPPING SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	7	0.09	1.5	12.30
REWER'S SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.50	1.0	0.21

* Insufficient data for computation

2.3.7.3.1.6 Pinyon-Juniper (Transect #10)

Thirty-four individual birds representing thirteen different species were recorded during the June Emlen strip census in this dense stand of mature pinyon-juniper (northern slope/6900') (Table 2.3-157). Of these thirteen species, the chipping sparrow, mountain chickadee and black-throated gray warbler accounted for 77 percent of the total population density for this stand. The chipping sparrow is one of the most common sparrows in the 6000 to 8000 foot elevational zones in Colorado, where it nests in shrubs and small trees (Bailey and Niedrach, 1965). Pinyon-juniper woodland with a dense shrub understory provides ideal nesting habitat for the chipping sparrow. The mountain chickadee and black-throated gray warbler both nest in northern coniferous forests (Bailey and Niedrach, 1965; Bent, 1963). The mountain chickadee is a common species in the pinyon-juniper woodland throughout the year, while the black-throated gray warbler, is common as a summer resident in the pinyon-juniper habitat (Davis, 1969).

2.3.7.3.1.7 Pinyon-Juniper (Transect #9)

Species diversity and overall summer density were relatively high along this transect as compared to estimates resulting from censuses conducted within this pinyon-juniper stand (southern slope/7000') during other seasons (Table 2.3-158). Twelve species were observed in this pinyon-juniper stand during summer field investigations. The most abundant species found during June were the bushtit and mountain bluebird.

2.3.7.3.1.8 Pinyon-Juniper/Mixed Brush (Transect #4)

Seven avian species (19 individuals) were observed along the pinyon-juniper/mixed brush (northern slope/7400') transect censused during June (Table 2.3-159). The species encountered are those typically associated with pinyon-juniper woodland and mixed brush communities in northwestern Colorado and northeastern Utah (Davis, 1969; Twomey, 1942). No one avian species was clearly predominant during the summer census, although the mountain bluebird, green-tailed towhee and Brewer's sparrow were the most frequently observed species.

2.3.7.3.1.9 Pinyon-Juniper/Sagebrush (Transect #6)

The stand of mixed pinyon-juniper and sagebrush (flat/7400') supported a variety of avian species indicative of woodland and/or brushland communities in northwestern Colorado (Davis, 1969). Such species as the Brewer's sparrow, blue-gray gnatcatcher and green-tailed towhee are birds typically associated with brush communities (Bent, 1964, 1968), and these were frequently observed in the pinyon-juniper/sagebrush type during June. The pinyon pines and junipers of the area attracted tree swallows, mountain chickadees and mountain bluebirds, while the lark sparrows were associated with open patches of grasses and forbs within this vegetation type.

Table 2.3-158. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 9, pinyon-juniper (south slope), during each sampling period conducted for RBOSP

Species	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
RED-TAILED HAWK	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10	0	**	**	0.00
GOLDEN EAGLE	1	1.00	1.0	0.10	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
MOURNING DOVE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	7	1.00	1.0	0.72
WHITE-THROATED SWIFT	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
COMMON FLICKER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
CLIFF SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
TREE SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	6	1.00	1.0	0.62
ROUGH-WINGED SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
SCRUB JAY	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
PINYON JAY	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10	4	1.00	1.0	0.41
COMMON RAVEN	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	13	1.00	1.0	1.33	0	**	**	0.00
MOUNTAIN CHICKADEE	1	0.25	1.0	0.41	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10	0	**	**	0.00
BUSHTIT	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
MOUNTAIN BLUEBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.13	1.5	2.46
GRAY VIREO	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	4	0.13	1.0	3.28
SOLITARY VIREO	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.13	1.0	1.64
BLACK-THROATED GRAY WARBLER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.13	1.0	1.64

** Insufficient data for computation

Table 2.3-159. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 4, pinyon-juniper/mixed brush, during each sampling period conducted for RBOSP

	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
Species	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
COMMON FLICKER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
SCRUB JAY	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
BLACK-BILLED MAGPIE	1	1,00	1.0	0.10	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
MOUNTAIN BLUEBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.13	1.0	2.46
BLUE-GRAY GNATCATCHER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.13	1.0	0.82
GREEN-TAILED TOWHEE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	5	0.31	1.0	1.64
DARK-EYED JUNCO	1	0.13	1.0	0.82	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
BREWER'S SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	4	0.25	1.0	1.64

** Insufficient data for computation

During June, species attaining the greatest densities were the blue-gray gnatcatcher, Brewer's sparrow and mountain bluebird (Table 2.3-160).

2.3.7.3.1.10 Sagebrush (Transect #2)

This sagebrush vegetation type (flat/6500') was found to support the lowest species diversity of all vegetation types censused by the Emlen method. Only four species were observed along the transect surveyed in this sagebrush stand during June (Table 2.3-161). Low numbers of lark sparrows, Brewer's sparrows, vesper sparrows and lark buntings were recorded during the June census.

The lark bunting, a species not previously recorded within the study area, is a common breeding bird throughout Colorado within the Upper Sonoran Zone. It is particularly abundant on the state's eastern grasslands (Bailey and Niedrach, 1965; Bent, 1968). According to Bailey and Niedrach (1965) it was reported as a common species in Moffat County during 1957. However, the lark buntings appear to change nesting areas periodically so consequently the uncommon status of the species within Tract C-a and adjacent areas could change as more observations are made.

2.3.7.3.1.11 Sagebrush (Transect #11)

Seven species were observed within the north slope sagebrush vegetation type (7100'). The most numerous species recorded during June were the Brewer's sparrow, green-tailed towhee and vesper sparrow. These three species comprised 92.5 percent of the estimated avian population (Table 2.3-162).

2.3.7.3.1.12 Greasewood/Sagebrush (Transect #8)

Of the twelve avian species recorded within this greasewood/sagebrush stand (flat/6400') in June, the Brewer's sparrow and chipping sparrow accounted for 74.1 percent of the total avian density (Table 2.3-163). This stand of greasewood/sagebrush supported the largest population of Brewer's sparrows (a species common throughout the study area) of any Emlen transect surveyed during June. None of the large flocks of dark-eyed and gray-headed juncos characteristic of this habitat type in the winter were recorded during this survey.

2.3.7.3.1.13 Rabbitbrush (Transect #3)

Thirty birds representing six different species were recorded along the Emlen strip transect surveyed in the rabbitbrush vegetation type (flat/6800') during June. The Brewer's sparrow and cliff swallow were the avian species most frequently observed (Table 2.3-164).

able 2.3-160. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 6, pinyon-juniper/sagebrush, during each sampling period conducted for RBOSP

	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
Species	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
ROAD-TAILED HUMMINGBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.25	1.5	0.62
ORNED LARK	70	0.29	1.0	24.60	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
LIFF SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	8	1.00	1.0	0.82
REE SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	1.00	1.0	0.31
CRUB JAY	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
OMMON RAVEN	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
OUNTAIN CHICKADEE	1	0.25	1.0	0.41	3	0.38	1.0	0.82	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
OUNTAIN BLUEBIRD	6	0.50	1.0	1.23	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	6	0.25	1.0	2.46
LUE-GRAY GNATCATCHER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.03	1.0	4.10
REEN-TAILED TOWHEE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.19	1.0	1.64
ESPER SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	4	0.33	1.0	1.23
ARK SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.13	1.0	1.64
REWER'S SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	10	0.31	1.0	3.28

** Insufficient data for computation

Table 2.3-161. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 2, sagebrush, during each sampling period conducted for RBOSP

Species	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
HORNED LARK	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.25	1.0	1.23	0	**	**	0.00
LARK BUNTING	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.25	1.0	0.41
VESPER SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.50	1.5	0.62
LARK SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.06	1.0	1.64
SAGE SPARROW	2	0.13	1.2	1.97	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
BREWER'S SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	7	0.50	1.0	1.44

** Insufficient data for computation

Table 2.3-162. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 11, sagebrush, during each sampling period conducted for RBOSP

	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
Species	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
AMERICAN KESTREL	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
COMMON FLICKER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
HOUSE WREN	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.50	1.0	0.21
MOUNTAIN BLUEBIRD	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
GREEN-TAILED TOWHEE	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	9	0.38	1.0	2.46
VESPER SPARROW	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	4	0.25	1.5	2.46
BREWER'S SPARROW	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	17	0.43	1.0	4.10

** Insufficient data for computation
-- Transect not sampled due to adverse weather conditions

Table 2.3-163. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 8, greasewood-sagebrush, during each sampling period conducted for RBOSP

Species	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
GOSHAWK	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
MOURNING DOVE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	1.00	1.0	0.31
CLIFF SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
ROUGH-WINGED SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	1.00	1.0	0.31
SCRUB JAY	0	**	**	0.00	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
COMMON RAVEN	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
SAGE THRASHER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.38	1.0	0.82	0	**	**	0.00
MOUNTAIN BLUEBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	4	0.17	1.0	2.46	0	**	**	0.00
YELLOW-RUMPED WARBLER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
GREEN-TAILED TOWHEE	5	0.31	1.0	1.64	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	4	0.17	1.0	2.46
VESPER SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.25	1.5	0.62
LARK SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.50	1.0	0.41
DARK-EYED JUNCO	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	22	0.15	1.0	14.76	0	**	**	0.00
GRAY-HEADED JUNCO	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	22	0.18	1.0	12.30	0	**	**	0.00
CHIPPING SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	0.03	1.5	12.30
BREWER'S SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	21	0.26	1.0	8.20
WHITE-CROWNED SPARROW	1	0.25	1.0	0.41	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00
SONG SPARROW	1	0.13	1.2	0.98	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.19	1.5	2.46

** Insufficient data for computation

Table 2.3-164. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 3, rabbitbrush, during each sampling period conducted for RBOSP

	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
Species	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/h
WHITE-THROATED SWIFT	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.1
CLIFF SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	7	1.00	1.0	0.7
ROUGH-WINGED SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.1
SCRUB JAY	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.0
MOUNTAIN CHICKADEE	0	**	**	0.00	0	**	**	0.00	3	1.00	1.0	0.31	0	**	**	0.00	0	**	**	0.0
BUSHTIT	0	**	**	0.00	0	**	**	0.00	25	1.00	1.2	3.08	0	**	**	0.00	0	**	**	0.0
MOUNTAIN BLUEBIRD	7	0.15	1.0	4.92	0	**	**	0.00	0	**	**	0.00	3	0.25	1.0	1.23	3	0.38	1.0	0.8
RUBY-CROWNED KINGLET	2	0.13	1.0	1.64	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.0
YELLOW-RUMPED WARBLER	2	0.13	1.0	1.64	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.0
GREEN-TAILED TOWHEE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.19	1.0	1.6
RUFOUS-SIDED TOWHEE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.50	1.2	0.25	0	**	**	0.0
GRAY-HEADED JUNCO	13	0.41	1.0	3.28	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.0
BREWER'S SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	15	0.21	1.0	7.3
WHITE-CROWNED SPARROW	8	0.25	1.0	3.28	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.0

** Insufficient data for computation

2.3.7.3.1.14 Riparian (Transect #15)

The variety of birds occupying the riparian transect (flat/6700') during the June census period is indicative of the heterogeniety of habitat along this portion of Stake Springs Draw (Table 2.3-165). During the June survey 117 individuals representing eighteen different avian species were noted. The total population was numerically dominated by song sparrows (24.6/hectare), red-winged blackbirds (19.7/hectare) and Brewer's sparrows (9.8/hectare). Mallards, green-winged teals, a sora and killdeer were observed near the Stake Springs pond.

2.3.7.3.1.15 Bottomland Meadow (Transect #1)

During the June Emlen strip census conducted within the bottomland meadow vegetation type (flat/6300') the highest species diversity (21 species) for the study area was recorded. The rough-winged swallow, and Brewer's black-bird were the most frequently observed species, but the common snipe had the densest population (8.2/hectare) (Table 2.3-166).

In contrast with the riparian habitat, the bottomland meadow vegetation type supported few dominant species and a sparse avian population during June (23.8 birds/hectare in comparison with 72.2 birds/hectare within the riparian type). The black-billed magpie and common raven are the only year-round residents recorded within this vegetation type.

2.3.7.3.1.16 Summary for All Vegetation Types

The largest number of individual birds and the greatest avian species diversity were encountered within the riparian, bottomland meadow, Douglas fir, aspen and all pinyon-juniper vegetation types during the summer sampling period (Tables 2.3-152, 2.3-153, 5.3-154, 2.3-158, 2.3-159, 2.3-160, 2.3-165 and 2.3-166). The rabbitbrush, sagebrush, mixed brush, and upland meadow vegetation types exhibited fewer avian species as well as low total numbers of birds in comparison with the aforementioned vegetation types (Tables 2.3-154, 2.3-155, 2.3-156, 2.3-161, 2.3-162, 2.3-163, and 2.3-164).

The Brewer's sparrow, vesper sparrow, chipping sparrow, mountain chickadee and mountain bluebird were observed in greater numbers and in a greater variety of vegetation types than any other avian species during the summer survey.

2.3.7.3.2 Upland Gamebirds

2.3.7.3.2.1 Sage Grouse

Two brood censuses to investigate sage grouse nesting success in the vicinity of Tract C-a were conducted July 14-15, 1975 along a

Table 2.3-165. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 15, riparian, during each sampling period conducted for RBOSP

Species	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/h
MALLARD	1	1.00	1.0	0.10	-	--	--	----	0	**	**	0.00	13	1.00	1.0	1.33	2	1.00	1.0	0.2
GREEN-WINGED TEAL	0	**	**	0.00	-	--	--	----	0	**	**	0.00	1	1.00	1.0	0.10	2	1.00	1.0	0.2
SORA	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	1.00	1.5	0.1
KILLDEER	0	**	**	0.00	-	--	--	----	2	1.00	1.0	0.21	4	1.00	1.0	0.41	3	1.00	1.0	0.3
MOURNING DOVE	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	4	1.00	1.0	0.4
BROAD-TAILED HUMMINGBIRD	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.06	1.5	2.4
WESTERN WOOD PEEWEE	0	**	**	0.00	-	--	--	----	0	**	**	0.00	1	0.50	1.0	0.21	0	**	**	0.0
CLIFF SWALLOW	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	20	1.00	1.0	2.0
ROUGH-WINGED SWALLOW	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.1
SCRUB JAY	0	**	**	0.00	-	--	--	----	0	**	**	0.00	2	1.00	1.0	0.21	0	**	**	0.0
BLACK-BILLED MAGPIE	1	1.00	1.0	0.10	-	--	--	----	0	**	**	0.00	2	1.00	1.0	0.21	0	**	**	0.0
COMMON RAVEN	0	**	**	0.00	-	--	--	----	0	**	**	0.00	4	1.00	1.0	0.41	0	**	**	0.0
MOUNTAIN CHICKADEE	3	0.13	1.0	2.46	-	--	--	----	0	**	**	0.00	0	**	**	0.00	0	**	**	0.0
ROBIN	0	**	**	0.00	-	--	--	----	0	**	**	0.00	7	0.29	1.0	2.46	7	0.22	1.0	3.2
MOUNTAIN BLUEBIRD	20	0.67	1.0	3.08	-	--	--	----	0	**	**	0.00	13	0.20	1.0	6.56	0	**	**	0.0
BLUE-GRAY GNATCATCHER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	5	0.25	1.0	2.0
WATER PIPIT	0	**	**	0.00	-	--	--	----	0	**	**	0.00	3	1.00	1.0	0.31	0	**	**	0.0
STARLING	0	**	**	0.00	-	--	--	----	0	**	**	0.00	3	1.00	1.0	0.31	0	**	**	0.0
ORANGE-CROWNED WARBLER	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.13	1.5	1.2
YELLOW-RUMPED WARBLER	30	0.21	1.0	14.76	-	--	--	----	0	**	**	0.00	0	**	**	0.00	1	0.25	1.0	0.4
WESTERN MEADOWLARK	0	**	**	0.00	-	--	--	----	0	**	**	0.00	2	0.50	1.0	0.41	0	**	**	0.0
RED-WINGED BLACKBIRD	0	**	**	0.00	-	--	--	----	0	**	**	0.00	13	0.27	1.2	5.90	26	0.20	1.5	19.68
BREWER'S BLACKBIRD	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	3	1.00	1.0	0.3
CASSIN'S FINCH	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	2	0.06	1.0	3.2
GREEN-TAILED TOWHEE	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	5	0.31	1.0	1.6
DARK-EYED JUNCO	0	**	**	0.00	-	--	--	----	0	**	**	0.00	10	0.10	1.0	9.84	0	**	**	0.0
GRAY-HEADED JUNCO	0	**	**	0.00	-	--	--	----	0	**	**	0.00	25	0.13	1.0	19.68	0	**	**	0.0
BREWER'S SPARROW	0	**	**	0.00	-	--	--	----	0	**	**	0.00	0	**	**	0.00	24	0.25	1.0	9.8
WHITE-CROWNED SPARROW	3	1.00	1.0	0.31	-	--	--	----	0	**	**	0.00	0	**	**	0.00	0	**	**	0.0
FOX SPARROW	1	0.13	1.0	0.82	-	--	--	----	0	**	**	0.00	0	**	**	0.00	0	**	**	0.0
SONG SPARROW	1	0.13	1.2	0.98	-	--	--	----	0	**	**	0.00	1	0.50	1.2	0.25	9	0.06	1.5	24.60

** Insufficient data for computation
-- Transect not sampled due to adverse weather conditions

able 2.3-166. Number of individuals and Emlen's coefficient of detectability (CD), basal detectability adjustment (BD) and population density estimate (#/ha) for each bird species observed on transect 1, bottomland meadow, during each sampling period conducted for RBOSP

Species	Oct. 1974				Dec. 1974				Feb. 1975				Apr. 1975				June 1975			
	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha	#	CD	BD	#/ha
ARSH HAWK	1	1.00	1.0	0.10	1	1.00	1.0	0.10	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00
OUGH-LEGGED HAWK	0	**	**	0.00	1	1.00	1.0	0.10	3	1.00	1.0	0.31	0	**	**	0.00	0	**	**	0.00
OLDEN EAGLE	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00
ERICAN KESTREL	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
OMMON SNIPE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.13	1.0	0.82	3	0.04	1.0	8.20
ESTERN WOOD PEEWEE	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.13	1.0	0.82	0	**	**	0.00
ORNED LARK	40	1.00	1.0	4.10	0	**	**	0.00	1	1.00	1.0	0.10	0	**	**	0.00	0	**	**	0.00
ARN SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
LIFF SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	4	1.00	1.0	0.41
IOLET-GREEN SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	1.00	1.0	0.31
REE SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10
OUGH-WINGED SWALLOW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	9	1.00	1.0	0.92
LACK-BILLED MAGPIE	1	1.00	1.0	0.10	2	1.00	1.0	0.21	6	1.00	1.0	0.62	0	**	**	0.00	2	1.00	1.0	0.21
OMMON RAVEN	0	**	**	0.00	3	1.00	1.0	0.31	4	1.00	1.0	0.41	0	**	**	0.00	2	1.00	1.0	0.21
OBIN	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	1.00	1.0	0.31	0	**	**	0.00
OUNTAIN BLUEBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	1.00	1.0	0.10	2	1.00	1.0	0.21
ATER PIPIT	1	0.13	1.0	0.82	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.13	1.0	0.82
ELLOW-RUMPED WARBLER	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	2	1.00	1.0	0.21
OBOLINK	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.13	1.0	0.82
ESTERN MEADOWLARK	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.25	1.0	0.41	3	0.33	1.0	0.82
ED-WINGED BLACKBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	9	1.00	1.0	0.92	9	1.00	1.0	0.92
REWER'S BLACKBIRD	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	18	1.00	1.0	1.85
ARK BUNTING	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	1	0.13	1.0	0.82
ESPER SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	4	0.25	1.0	1.64
REE SPARROW	0	**	**	0.00	0	**	**	0.00	3	0.75	1.0	0.41	0	**	**	0.00	0	**	**	0.00
REWER'S SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	4	0.25	1.0	1.64
HITE-CROWNED SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	3	0.19	1.0	1.64
ONG SPARROW	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	0	**	**	0.00	4	0.25	1.0	1.64

** Insufficient data for computation

twenty mile route located in sagebrush and mixed brush vegetation types, the preferred nesting habitats for sage grouse (Patterson, 1952; Rogers, 1964). When sage grouse were encountered on the census route they were flushed and tallied according to sex and age. Four sage grouse (1 female, 3 chicks) were observed on July 14 and two flocks comprised of seven (2 males, 1 female, 4 chicks) and sixteen (3 females, 13 chicks) birds respectively were seen on July 15, 1975. All sightings were within a one mile segment of the census route on the ridge northwest of the right fork of Stake Springs Draw within an upland sagebrush vegetation type. Two opportunistic sightings on July 30-31 reported 27 sage grouse, both adults and juveniles, also in this vicinity within the sagebrush/mixed brush vegetation type.

Summer opportunistic sightings also provided records of sage grouse populations in two other locations within the study area. Thirteen sage grouse (11 adults, 2 juveniles) were reported on the Cathedral Bluffs within a mountain shrub vegetation type and two sightings of five and three grouse (adults and young respectively), were recorded on Airplane Ridge within a sagebrush/mixed brush vegetation type. The sightings of juveniles indicate that sage grouse are nesting near the sighting locations mentioned above.

Rogers (1964) described sage grouse density in the region as "light" and indicated that sage grouse have only been observed in low numbers within sagebrush communities in the Piceance, Yellow and Douglas Creek drainages. He has recorded them on 84 Mesa, the only area in Rio Blanco County near Tract C-a where they have been sighted. A possible explanation for the reported rarity of sage grouse in Rio Blanco County, according to Rogers (1964), is that a large amount of the sagebrush range in this county is intermixed with pinyon-juniper, a combination apparently disliked by the grouse. Rogers (1964) also states that sagebrush in this county occurs in steep and narrow canyons with little available water, habitats also not preferred by sage grouse.

Sage grouse are apparently not limited to the sagebrush vegetation type in the study area, rather they inhabit a wide variety of upland brush vegetation types on and near Tract C-a. All observations within the Tract C-a vicinity indicate localized but relatively dense populations of sage grouse within areas of upland sage and mixed brush vegetation types.

2.3.7.3.2.2 Blue Grouse

Blue grouse were censused twice along a standard census route during June 11-12, 1975, a period within the blue grouse displaying season (Rogers, 1968). During this time blue grouse males can be heard hooting or fluttering.

The species favors open conifer-aspen stands or areas where aspen and shrubs are intermixed (Rogers, 1968). Therefore, these vegetation types, found only in the area of Cathedral Bluffs, were traversed for two consecutive mornings to count blue grouse. These surveys, approximately 24.2 km (15 mi) in length, commenced at daybreak and continued for three hours after sunrise. At each appropriate vegetation site, stops were made and all grouse heard displaying were recorded. Twenty-three displaying adult male blue grouse were recorded along this census route. Display locations were plotted on field maps and identified as probable nesting areas for this species. These same locations were revisited on August 18-19 to locate all flocks and record young-to-adult ratios. Blue grouse were not observed during that field investigation. The absence of blue grouse during August may be due to the seasonal movements of this species. After breeding and nesting, many blue grouse hens, their broods and some males will remain in the meadow, brush, aspen and open timber stands at lower elevations until mid-August. They then slowly move back to the heavily timbered areas at higher elevations (Rogers, 1968). The time and degree of movement of this species is related to food availability and the weather (Rogers, 1968). It is thought that the blue grouse observed in the mountain shrub communities on the Cathedral Bluffs during the breeding season may have already migrated to the adjacent stands of Douglas fir for the winter and therefore were not observed during the late August survey.

2.3.7.3.2.3 Mourning Doves

The mourning dove is a common summer resident within the pinyon-juniper and greasewood/sagebrush vegetation types. During the June Emlen censuses and qualitative surveys, seventeen sightings of mourning doves were recorded in the pinyon-juniper vegetation type and three in the greasewood/sagebrush vegetation type. Twomey (1942) describes the mourning dove as a summer resident of all habitats from low desert shrub to the coniferous forests in northeastern Utah.

2.3.7.3.3 Waterfowl

Waterfowl surveys at the Stake Springs impoundment were conducted twice during June and twice during August, 1975. A total of five waterfowl and eight shorebird species was observed during the two sampling periods.

The June sampling period demonstrated a substantial increase in the numbers of different waterfowl and shorebird species, but a decrease in abundance of birds at the Stake Springs impoundment. Of the 11 species recorded from 39 different bird sightings, the mallard, green-winged teal and common snipe were the most abundant.

Wilson's phalarope, killdeer, spotted sandpiper, gadwall, cinammon teal, sora, Virginia rail and blue-winged teal were also observed but in lower numbers. The cinammon teal, gadwall, sora and Virginia rail are species not previously recorded by ECI in the vicinity of Tract C-a. The semi-palmated plover, long-billed curlew and white-faced ibis were recorded during avian surveys conducted in June.

Waterfowl abundances were relatively high during the August census period when a total of 62 birds was recorded. However, fewer distinct waterfowl species were observed during this census period; only four species, the mallard, killdeer, American avocet and solitary sandpiper were recorded. The mallard was by far the most abundant waterfowl species recorded during the August survey. It was observed during every count. On one morning 35 mallards were observed feeding in Stake Springs pond. The large numbers of mallards present during mid-August may be due to pre-migration flocking. Although the migration flights do not begin in earnest until late September, flights from local nesting areas to nearby feeding grounds occur in late August, or early September (Kortright, 1967). Many of the scattered mallards in the vicinity of Tract C-a probably come to feed in the Stake Springs pond before migrating south.

2.3.7.3.4 Raptors

2.3.7.3.4.1 Aerial Surveys

Five raptor species were observed during two survey flights conducted over the study area on June 26 and August 18, 1975. The red-tailed hawk, Cooper's hawk, American kestrel and common raven were observed during June (Table 2.3-167). Of the 22 sightings recorded, the common raven was observed most frequently. Fewer numbers of raptors were observed during the August survey. Four species, the golden eagle, red-tailed hawk, Cooper's hawk and American kestrel were recorded (Table 2.3-167). High winds were prevelant throughout the August survey and may have had an adverse effect on local raptor activity.

2.3.7.3.4.2 Ground Surveys

Opportunistic ground sightings of raptors in the study area during the June, 1975 sampling period, revealed the presence of twelve different raptor species, one of which (the prairie falcon) is presently listed as threatened (USDI, 1973) and one of which (the peregrine falcon) is presently listed as endangered (USDI, 1974).

The turkey vulture, goshawk, sharp-shinned hawk and Swainson's hawk were observed for the first time by ECI in the study area during the June, 1975 sampling period. The American kestrel, marsh hawk, golden eagle, and common raven were frequently observed during June. Cooper's

Table 2.3- 167. Raptor species encountered on aerial surveys conducted during the summer, 1975 for RBOSP

Species	Numbers Observed		
	June	August	Total
Cooper's hawk	2	1	3
Red-tailed hawk	3	1	4
Golden eagle	0	1	1
American kestrel	5	3	8
Common raven	12	0	12
Unidentified raptors	0	2	2
Total	22	8	30

hawks and great horned owls were also observed during the summer field period. The red-tailed hawk was recorded more frequently than any other raptor species and was seen throughout most vegetation types. Table 2.3-168 lists raptor observations recorded during ground investigations conducted in summer, 1975.

Ground surveys to locate raptor nests were conducted during June, 1975. Eleven nest sites were located, all of which were active at the time of investigation. All active nests contained chicks and one Cooper's hawk nest had a young nestling and 2 eggs. Marsh hawks were found occupying three nest sites; American kestrels three nest sites; golden eagles two nest sites; Cooper's hawks two nest sites; and a goshawk one nest site. All active raptor nests and nest contents are listed in Table 2.3-169.

2.3.7.4 Summary and Conclusions

The June sampling period occurred during the height of the breeding season for most avian species. The variety of vegetation types present in the study area provides suitable nesting sites for many species, as demonstrated by the relatively high avian diversity recorded during the summer season. Of the 96 species recorded during this sampling period, 42 species had not been previously recorded by ECI personnel on the study area. This brings the total to 127 species recorded within the area of investigation. The mallard, mountain bluebird, green-tailed towhee, chipping sparrow, Brewer's sparrow and vesper sparrow were the most frequently observed species during the summer sampling period.

The riparian cummunity and adjacent habitats supported the greatest bird density and diversity throughout the year while the sagebrush and rabbitbrush communities supported the lowest number of different bird species and individuals.

In the Tract C-a vicinity, a few surface ponds and streams create isolated islands of habitat for many waterfowl species within the predominantly arid region that is northwestern Colorado. For this reason, representatives of such habitat types have an unusually high ecological value within this region. Fourteen waterfowl and shorebird species have been recorded within the vicinity of Tract C-a

A fairly large population of breeding raptors was present in the area of investigation. The common raven, American kestrel and red-tailed hawk were the species recorded most frequently in opportunistic observations during summer, 1975. The majority of the nesting raptors present in the area were found in the pinyon-juniper woodlands and on the associated sandstone cliffs.

Table 2.3-168. Opportunistic sightings of raptor species recorded during summer, 1975 for RBOSP

Species [1]	Total Number of Observations Recorded
Turkey vulture	1
Sharp-shinned hawk	1
Cooper's hawk	2
Goshawk	2
Red-tailed hawk	12
Swainson's hawk	1
Marsh hawk	9
Golden eagle	6
Peregrine falcon	3
Prairie falcon	2
Great horned owl	4
Total	43

---

[1] American kestrels and common ravens were observed consistently throughout the sampling period within most habitats.

Table 2.3-169. Active nests located on or near Tract C-a during summer, 1975 for RBOSP

Nest Number	Species	Contents of Nest	
		Eggs	Chicks
21	American kestrel	0	3
22	Marsh hawk	0	4
23	Marsh hawk	0	3
24	Cooper's hawk	2	1
25	American kestrel	0	2
26	Golden eagle	0	1
27	Marsh hawk	0	4
28	Cooper's hawk	0	2
29	Goshawk	0	1
30	American kestrel	0	2
31	Golden eagle	0	1

Field data collected during summer 1975, indicate that most avian species encountered in the area of investigation were those expected to be present based on published information from northwestern Colorado and northeastern Utah (Bailey and Niedrach, 1965; Davis, 1969; Hayward, 1967; Twomey, 1942).

Several unexpected species were encountered during field sampling. All such species discussed below except Baird's sparrow have been recorded previously in northwestern Colorado, but only as unusual occurrences.

Virginia Rail--Two individuals were observed in the riparian habitat adjacent to the Stake Springs impoundment. The status of this species is undetermined west of the Continental Divide (Davis, 1969). Ela (1971) reported a sighting from Mesa County in 1970, the first record in many years. Martin, Baldwin and Reed (1974) reported hearing them regularly along the Yampa River near Craig during the 1971-73 breeding seasons. They indicate that this species is a regular breeder in northwestern Colorado.

Sora--On June 6 and 11, 1975, soras were observed at the Stake Springs pond. Davis (1969) describes the sora as an uncommon summer resident of the cattail swamps in western Colorado.

Long-billed Curlew--On June 2, 1975 a long-billed curlew was recorded in a flooded pasture along Ryan Gulch. This species is rare west of the Colorado Continental Divide (Bailey and Niedrach, 1965). Martin, et. al. (1974) recorded one individual on agricultural fields near Craig during the summer of 1971.

Semi-palmated Plover--The semi-palmated plover was recorded in the mixed brush vegetation type located on Cathedral Bluffs during a June qualitative survey. This small plover is an irregular migrant along the shores of reservoirs and lakes in eastern Colorado. Bailey and Niedrach (1965) have no records of the semi-palmated plover in northwestern Colorado. Davis (1969) records the semi-palmated plover as a rare migrant in western Colorado.

Red-eyed Vireo--Two red-eyed vireos, an unusual species for Colorado, were recorded in an aspen stand along Cathedral Bluffs during a qualitative survey. This species is a rare visitor to the Piceance Basin (Bailey and Niedrach, 1965; Martin, et. al., 1974) particularly within the vicinity of Tract C-a. The preferred nesting habitat of the red-eyed vireo is the cottonwood-willow river bottom. The paucity of this vegetation type within the Piceance Basin is the major limiting factor on the red-eyed vireo populations within the area.

Bobolink--The bobolonk, an unusual species for this area, was recorded once during the June survey. Since the habitat of the bobolink is limited rather strictly in the intermountain area to western pasturelands, its distribution in Colorado seems to be spotty and it is not at all common in the Piceance Basin (Bailey and Niedrach, 1965; Hayward, 1967). However, the increased cultivation of western lands is improving the nesting conditions for the species and as a result, according to Bent (1968) the bobolink "has been encouraged to extend its range and to move farther west." Although little or no cultivated lands is found within the study area the bobolink sighted is probably a straggler from the agricultural lands along the Piceance Creek.

Baird's Sparrow--One individual was observed within a sagebrush community on 84 Mesa during June qualitative counts. This species has never been recorded on the western slope of Colorado nor in eastern Utah (Bailey and Niedrach, 1965; Davis, 1969; Twomey, 1942). The Baird's sparrow is an irregular migrant on the eastern prairies of Colorado during spring and fall, with a few individuals wintering (Bailey and Niedrach, 1965). Being exceedingly inconspicuous birds (Bent, 1968) they may be more common within the state than the records now indicate.

2.3.7.5--AVIFAUNA RAW DATA

2.3.7.5--AVIFAUNA RAW DATA

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83.C.9.1.2.1-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

vm 7/21

Date: 6-11-75 Observer: VAN HORN Site: Bottomland Meadow

Times: 1910-2025 Temp.: 21°C Wind: 0-5 Sky: Clear

Project: 83-05 Other Comments: Bobolink at 25-50 (viewed at 10' w/ 10x40 after initial observation)

Number Recorded Per Strip

Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
657 LARK Bunt	B		I				
599 BRewer's Bl.	A	I	III	III	𝍸	𝍸II	
596 RWBBird	A I	I	III	II	II		
511 WATER Pip	B		I				
241 C-Snipe	B II		I				
55 Y-rump WAR	A			II			
505 Mountain Bl.	A	I			I		
6 Vesper Sp.	B	I		II	I		
67 Brew. Sp.	B	I			II	I	
130 Kestrel	A			I			I
447 COCO	A						II
444 Magpie	A		I				I
592 Bobolink	B		I				
77 WC-Spar	B		II	I			
683 Song Sp	B	I		II	I		
594 Meadowlark	B		I		II		
12 allows Cliff	A						IIII
13 Tree	A						I
32 Violet	A						III
29 Barn	A						II
35 Rough-wing	A						𝍸 IIII

RBOSP PROGRESS REPORT

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83.C.9.1.2.3-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: June 5, 1975

Observer: VanHorn

Site: ~~BootHill Sage~~ Sagebrush-flat R.VM 7/21

Times: 1810 - 1852

Temp.: 27°C - 26°C

Wind: 0-5

Sky: 10% oc

Project: 83-05

Other Comments: Dick McGuire along

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
673	Brewer's Spa.	B			|||	||||		
658	Vesper	B			|	|		
657	L. Bunting	c*			♂			
659	Lark Spa.	B	|					
	* B.D.	value	= 1.5					

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83.C.9.1.2.7-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

RDM 7/21

Date: 6-13-75 Observer: VanHorn Site: RABBITBRUSH

Times: ~~1545 - 1650~~ 1445 - 1550 Temp.: 26°C Wind: 0-5 Sky: 30% OC

Project: 83-05 Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
505	Mtn Blue	B			II	I		
673	SPBR	B	III	IIII I	III	II	I	
645	G Towhee	B		II	I			
683	Song Sp.	C*						
430	Cliff	A						IIII II
435	Rough-wing	A						I
352	WT Swift	A						I

* B.D. value = 1.5

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83.C.9.1.2.10-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

R Vin 7/21
Pinyon-Juniper / Mixed Br..

Date: 6-10-75 Observer: Van Horn Site: Tower P-J/Brush

Times: 1900 - 2015 Temp.: 20°C (18°C) Wind: 0-5 Sky: 80% OC

Project: 83-05 Other Comments: Rain all day into late afternoon

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
439	Scrub J	A			/		/	
505	Mtn Blue	B	/	//				
373	Flicker	A	/			/		
506	Blue-gray	B		/				
645	G.Titow	B	/		//	/	/	
444	Magpie	A		//				
673	Brewer's Sp.	B	/		//	/		

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83.C.91.2.11-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

RDM 7/21

Date: 6-25-75 Observer: VanHorn Site: ~~Mtn Shrub~~ (tract) Mixed Brush north/slope

Times: 0735 - 0830 Temp.: 18°C Wind: 5-10 Sky: 50%

Project: 83.05 Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
645	GTTow	B			||		|	
505	Mt Blu	B						||
354	BT Humm	C*			||			
506	EG Grsbk	B	||					
73	H vireo	B				|	||	
352	WT Swift	A						|
		*B.D.	value	=1.5				
	DG Grsbk	sage					||	
	Song	in bottom				||		
	Robin	in bottom				|		
	Scrub J	Pinion					|	

RBOSP PROGRESS REPORT

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83.C.9.1.2.12-5

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: 6-11-75

Observer: Van Horn

Site: ~~Horse P-J/sage~~ Pinyon-Juniper / Sagebrush EDW 7/21

Times: 0915 - 1000

Temp.: 20°C

Wind: 0-8

Sky: Clear

Project: 83-05

Other Comments: (ACTIVITY STILL HIGH)

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
673	SPBR	B	//	/	///	/	///	
430	Cliff	A		//				𝍸 /
433	TREE SWA	A						///
439	APCO	A			//			
447	COCU	A						/
505	SJCU	B	/	//		///		
506	POCA	B /		//				
6[illegible]5	CHCH	B		//		/		
6[illegible]9	LARK SP	B	/		/			
658	VES SP	B		/	//	/		
354	B.T. Hum	C*			/			/
		*B.D.	value	= 1.5				

RBOSP PROGRESS REPORT

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83.C.9.1.2.13-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

p mm 7/21

Date: 6-12-75 Observer: Van Horn Site: ~~Ridge top~~ Upland meadow

Times: 0858-1000 Temp.: 18°C [✓ Wind] 0-5 Sky: Clear

Project: 83-05 Other Comments: (GUSTING TO 10mpH)

Number Recorded Per Strip

Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
658 Vesper B		1		11			
428 Horned L. A	1111	1		111	1		11
685 Chestnut—	B						
collared longspur			11				
645 Green-Tow	B			1			
673 Brewer Sp.	B	1		1			
130 Kestrel	A		1				
5[illegible]5 Mtn. Blue	A	1	1				

RBOSP PROGRESS REPORT

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83.C.9.1.2.14-5
prm 7/21
Greasewood/Sagebrush

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: June 7, 1975
Observer: VanHoen
Site: Corral Sage Btm
Times: 1730 - 1840
Temp.: 83°F - ?°C
Wind: 0-5
Sky: 0% OC
Project: 83-05
Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
430	Cliff Swa.	A						||
645	Green T. Tow	B	|	||	|			
673	Brewer's Spa.	B	~~||||~~	||	|||	|~~||||~~	~~||||~~|	
683	Sage Spa	C*	|	|		|		
658	Vesper Spa	C*			|			
659	Lark Spa	B				||		
671	Chip Spa.	|| C*						
4[illegible]5	Red-wing	A						|||
4[illegible]9	Scrub jay	A		|				
310	Dove	A						|||
106	Goshawk	A						~~|~~ |
447	Raven	A						|
		*B.D.	value =	1.50				

RBOSP PROGRESS REPORT

ecology consultants, inc.

83.C.9.1.2.15-S

FIELD DATA SHEET - EMLEN STRIP CENSUS

RVM 7/21

Date: 6-12-75 Observer: VanHorn Site: SOUTH SLOPE P-J

Times: 1805-1940 Temp.: 20°C Wind: 0-5 Sky: 20% OC

Project: 83-05 Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
439	SCRUB J	A	/	//			/	
505	Mtn Blue	B	//			//		
373	FLICKER	A			/	/		
526	Solitary	B	/		/			
310	M. Dove	A		////	/	//		
64 P.	BUSHTIT	C*		//				
52	NT Swift	A						//
130	Clift	A						𝍸 /
13	Tree Swal	A						//
135	Rough w.	A						/
525	Grey Vir.	B		//				
57	BTG WAR	B	/			//		
		* B.D.	value =	1.5				

RBOSP PRO

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83.C.9.1.2.16-5

R.J.M 7/11

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: June 6, 1975 Observer: VanHorn Site: North Slope PJ 6700' (Hunting club)

Times: 0700-850 Temp.: 13°C 23°C Wind: 0-5 Sky: 20% oc

Project: 83-05 Other Comments: Rain shower over area at 0600 (approx) 150° → 50° → 340°

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
454	PAGA B		||					
663	JUCA B			|				
671	SPPA C*	||	|||	|			|	
425	West. Wood P.	B						
645	Green-T. Tow.	B			||			
657	Grass-hopper	B			|			
557	BT. GWAR	B		||	||||	|	|	
419	Grey Fly	B			卌	|		
3[illegible]1	B.T. Hummer	C*		|				
673	Brew. Spa.	B				|		
636	Pine Siskin	B						|
373	C. Flicker	A				||	|	
505	Mtn Blue	B			|	||		
526	Sol. Vireo	B			|			
603	Cowbird	A				||		
347	Nighthawk	B						||
		*B.D.	value =	1.5				
	sharp shinned hawk, fly by after transect							
	mourning doves, after transect					|||		
	call note	⌒⌒'	‾2					
				check song call of gray fly catcher, dusky flycatcher (...) or hammond's fly!				

song reversed.

PROSP PROGRESS REPORT

ECI
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83C.97.2.174

FIELD DATA SHEET - EMLEN STRIP CENSUS

RDM 7/21

Date: 6-24-75 Observer: Van Horn Site: Sagebrush - D north slope

Times: 0710 - 0815 Temp.: 17°C Wind: 0-5 Sky: 30-40%

Project: 83-05 Other Comments: w/ gust to 10 mph

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
673	SPBR	B	|||	||||	||||	||	卌	
645	GT Tow	B	|	||	|||	|	||	
671	~~CH Sp~~	~~B~~						
658	VSPR	C*		||	||			
473	H. Wren	B				|		
130	FASP	A						
354	B.T.Hum	C*						||
373	C.Jickor	A						|
5	M.Blue	B					||	|
		*B.D.	value=	1.5				
	B.T.G.Wbl	Pinyon		|				
	W.B.Nut	Pinyon						
	Mtn Chick	Pinyon					|	
	Scrub J	P.J. Pinyon					||	
	GT Tow	Pinyon				|	|	
	M. dove	Pinyon					|	

RBOSP PROGRESS REPORT

ECI

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83.C.9.1.2.18-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

KOM 7/22 ~~Initial:~~

Date: 6-25-75 Observer: Van Hoen Site: Mixed ~~Mountain~~ Brush (E) south slope

Times: 1810 - 1930 Temp.: 20°C Wind: 5-10 Sky: 50% oc

Project: 83-05 Other Comments: gusting to 10-15mph

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
615	Green-t. Tow	B	II		I		I	
658	Vesper	C*I	I	I	II			
673	Brewer	B	II	III	II	I		
438	Steller's	A			I			
447	Raven	A						I
109	M.Hawk	A						II (♀+♂)
581	MAC.War	B	II					
373	Flicker	A		I			I	
		*B.D.	value=	1.5				

PROSP PROGRESS REPORT

FRIDAY

ECI
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83.C.9.1.2.19-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: 6-13-75
Observer: VanHorn
RDM 7/21
Site: Douglas Fir
Times: 0900-1030
Temp.: 20°C
Wind: 0-5
Sky: Clear
Project: 83-05
Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
509	RC-King	C*		||		|	|	
438	Steller's J	B	|	||	|			
473	H. Wren	B		||	|			
34	B Grouse	B	|					
417	Ham. Fly	B		|	||			
454	Mtn Chick	B	||	|	|			(Song)
469	SICA	B	||		|		|	
493	TUMI	B		|		||		
49	HYGU	C*		|	||		|	
636	Pine Siskin	B	||	|	||			
628	Cassins Fin	B		|				
663	JUCA	B	|	||		|		(Song)
641	Red Cross	C*	|	||				
	UNID WARB		||	|	|			(Song - No ID)

*B.P. value = 1.5

RBOSP PROGRESS REPORT

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83.C.9/2.20-4

FIELD DATA SHEET - EMLEN STRIP CENSUS

RDM 7/21

Date: 6-13-75
Observer: VanHorn
Site: Aspen
Times: 0700 - 0830
Temp.: 15°C
Wind: 0-5
Sky: Clear
Project: 83-05
Other Comments:

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
645	G.T. Tow B			|				
[illegible] Warb.	543 ~~[illegible]~~ B		|		||			
473	H Wren B				|			
373	Flicker A				|		|	
646	R.S. Towhee	C*		|				
509	R.C. Kinglet	C*	||	|				
581	MacGilvary	B	|					
452	B.C. Chick	B		||	|			
6[illegible]	BH Gros.	B		||				
454	Mtn Chick	B	||					
134	Blue Grouse	B			|		|	
544	Orange-Crown	C*	|					
325	GHOwl	A		|				
352	AĔSA	A						
354	B.T. Hum	C*	||	|				||
	~~C. Flicker~~							
390	Downy	A			|			
535	WAR. Vireo	B	|	||	|	|		
		*B.D	value =	1.5				
	Virg'n Warb.		|					

RBOSP PROGRESS REPORT

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83.C 9.1.2.21-4
REV 7/21

FIELD DATA SHEET - EMLEN STRIP CENSUS

Date: June 5, 1975 Observer: Van Horn Site: Riparian

Times: 0720-0900 Temp.: 9°C (48°F) 18°C FINISH. Wind: 0-5 Sky: 0% OC

Project: 83-05 Other Comments: Dick McGuire along

Number Recorded Per Strip

	Species	0-10'	10-25'	25-50'	50-100'	100-200'	200-400'	Fly Over
430	Cliff Sw.	A			𝍸𝍸			𝍸 𝍷𝍷𝍷𝍷
673	Brewers Sp.	B	𝍸𝍷	𝍷𝍷	𝍷𝍷𝍷𝍷	𝍷𝍷𝍷	𝍸 𝍷𝍷𝍷𝍷	
506	Blue-gray	B	𝍷	𝍷𝍷	𝍷𝍷			
599	Brewer Blkbd	A		𝍷𝍷𝍷				
636	Pine Siskin	B						𝍷
435	Rough-winged	A			𝍷			
310	M. Dove	A						𝍷𝍷𝍷
493	TUMI	B	𝍷	𝍷𝍷𝍷	𝍷𝍷	𝍷		
6	G.T. Towhee	B		𝍷𝍷		𝍷	𝍷𝍷	
628	Cassin Finch	B	𝍷𝍷					
544	Orang Crown	C*		𝍷				
596	RWBB	𝍷 C*	𝍸 𝍷𝍷	𝍸𝍷	𝍸𝍸𝍷𝍷			𝍷
354	Bt. Hummer	C*	𝍷	♀				
57	BC Hummer Sp.	B						
200	Killdeer	A	𝍷	𝍷𝍷				
33	Song Sp.	𝍷𝍷𝍷𝍷 C*	𝍷	𝍷𝍷𝍷			𝍷	
	Blue W. Teal	69 A		♀		𝍷		
	Mallard	059 A		♀	♂			
	Com. Snipe	241 B						
	Sora	175 C*					heard 1	
	G.Wing Teal	071 A		(♂) ♀				
555	Yellow-rump	B			𝍷			

Swallow nesting area at N side of Transect, 400 ft.

* B.D. value = 1.5

[illegible]

HBOSP PROGRESS REPORT

83.C.9.2.2.1-1

6-11-75 PPM 7/21

BLUE GROUSE SURVEY

CATHEDRAL BLUFFS

0435 - 0500

WIND START 0-5 w/10

FINISH 0-5 w/10

TEMP START 16°C

FINISH 21°C

SKY % OC START 0%

FINISH 10%

ROUTE, SOUTH TO NORTH

9 grouse heard hooting
4 grouse heard fluttering

ROUTE DEPICTED ON MAP ALONG W/ GROUSE LOCATIONS!

RBOSP PROGRESS REPORT

83.0 4.2.2.1-2
pdm 1/01

6-12-75
BLUE-GROUSE SURVEY
CATHEDRAL BLUFFS
0520- 0815

WIND: START 0-5
FINISH 0-5

TEMP: START 17°C
Finish 20°C

SKY % OC: START 0%
Finish 0%

ROUTE SOUTH TO NORTH
4 grouse heard Hooting
6 grouse heard fluttering

ROUTE ON MAP ALONG w/ GROUSE LOCATIONS !

AOSP PROGRESS REPORT

83.C.9.2.2.1-3

BLUE GROUSE SURVEY

Project 83/05
8/19/75
0620-1015
15-20 mph gusts of wind periodically
55°F start
70°F end

Pat Kennedy

The first 15 points where blue grouse were observed in the spring, were rechecked and no blue grouse were observed. At point 4, 13 sage grouse were observed, 2 juv. and 11 adults. Four females definately identified. (ad.) The habitat was upland meadow and mixed shrub ecotone.

Pat Kennedy

Bob Macgregor along QA/QC

9/5/75

BLUE GROUSE SURVEY

Project 83/05
8/20/75
0810-1010
0-5 mph
65°F start
75°F end
100% overcast

The last 8 points at which blue grouse were observed in the spring were rechecked and no blue grouse were noted.

Pat Kennedy

Bob Macgregor along QA/QC

RJM 9/5/75

83.C.2.2.2-1

RDM 7/25/75

7/14/75

Project 83/05

Sage Grouse Survey

0610 start   0935 finish

0% overcast

0-5 mph wind from west

Temp 58°F

Leg one: No grouse

Leg two: no grouse

Leg three: 2 flocks.

Ⓐ 2♂
1♀
4 chicks

Ⓑ 3♀
13 chicks

Leg four: no grouse.

Denis VanHoen

RBOSP PROGRESS REPORT

P3 C.9.2.2.2.

7/15/75

RDM 7/25/75

Project 83/05
Sage Grouse Survey
0620 Start
0855 Finish
40% overcast
0-5 wind
56° F Start
73° F Finish

Leg one: no birds
Leg Two: No Birds
Leg Three: 1 ♀, 3 chicks on pipeline spur
Leg Four: No Birds.

Denis Van Horn
Bob McGreager along QA/QE

RBCCP PROGRESS REPORT

83.C.9.3.2-10

WATERFOWL COUNT RESULTS - FIELD DATA FORM

Project 83-05 Date June 5, 1975 Observer VanHorn [illegible]

Pond Stake Springs Time 1920 Wind 0-5 Temp 28°C

cent Sky Overcast 0% Comments Dick McGuire

Species	Number Observed M.	F	Juv	Notes
MALLARD	1			
CINNAMON TEAL		1		
GREEN-WINGED TEAL		1		
COMMON SNIPE				1

83.C.9.3.2-11

WATERFOWL COUNT RESULTS - FIELD DATA FORM

Project 83-05 Date June 5, 1975 Observer Van Horn
Pond Stake Springs Time 1300 Wind 0-5 Temp 28°C (80°F)
Percent Sky Overcast 0% Comments Dick McGuire along

Species	Number Observed M	F	Juv	Notes
MALLARD	1			(Anseriformes)
COMMON SNIPE				1
Green-winged Teal		1		(Anseriformes)
Sora				1

WATERFOWL COUNT RESULTS - FIELD DATA FORM

83.C.9.3.2-12

Project 83-05 Date 6-5-75 Observer VanHorn

Pond Stake Springs Time 0650 Wind 0-5 Temp 7°C /44°F

Percent Sky Overcast 0 Comments D McGuire along

Species	Number Observed M	F	Juv	Notes
Common Snipe	1			11 (NOT IN Anseriformes ORD)
MALLARD	1	12		
Green-winged teal		1		

ECI

WATERFOWL COUNT RESULTS - FIELD DATA FORM 83.C.9.3.2-13

Project 83-05 Date 6-11-75 Observer Van Horn

Pond Stake Springs Time 1050 Wind 0-5 Temp 21°C

Percent Sky Overcast 0% Comments

Species	Number Observed M	F	Juv	Notes
MALLARD	1			
CINNAMON teal	1			ORDER ANSERIFORMES
Green-winged teal	1	1		
Spotted Sandpiper				1
SORA				11
Virginia Rail				1
Wilson's phalarope				1

WATERFOWL COUNT RESULTS - FIELD DATA FORM

83.C.9.3.2-1

Project 83-05 Date 6-11-75 Observer VanHorn [illegible]

Pond Stake Springs Time 1230 Wind 0-5 Temp 21°C

Percent Sky Overcast 0 Comments

Species	Number Observed			Notes
	M	F	Juv	
Mallard	1			Order Anseriformes
Common Snipe				1
Wilson's phalarope				1

WATERFOWL COUNT RESULTS - FIELD DATA FORM

83.C.9.3.[illegible]-15

[illegible] 7/21

Project 83-05 Date 6-11-75 Observer VanHorn

Pond STAKE SPRINGS Time 2048 Wind 0-5 Temp 20 °C

Percent Sky Overcast 0% Comments "DUSKISH"

Species	Number Observed M.	F	Juv	Notes
MALLARD	1	1		
GREEN-WINGED TEAL	1	11		ANSERIFORMES
BLUE WINGED TEAL		1		
GADWALL	1			
Virginia Rail				1 (heard)
Sora				1 (heard)
Common Snipe				11
Killdeer				111

ECI

83.C.9.3.2-.6

WATERFOWL COUNT RESULTS - FIELD DATA FORM

Project 83 Date 8/19/75 Observer P. Kennedy
Pond Slake Springs Time 1315 - 1330 Wind 10-15 mph Temp 75° F
cent Sky Overcast 80% Comments
TIM 9/2/75

Species	Number Observed M	F	Juv	Unk	Notes
American Avocet				1	All adult
Mallards				5	All adults, but sex is diffic
					to determine from any dis-
					tance, due to the fact that
					the males are just begin-
					ning their autumn moult
Solitary sandpiper				1	Adult

RBOSP PROGRESS REPORT

SCI

830952-11

WATERFOWL COUNT RESULTS - FIELD DATA FORM

Project 83 Date 8/19/75 Observer R. Kennedy

Pond Stake Springs Time 1915-1930 Wind 0-5 mph Temp 70°F

rcent Sky Overcast 100 Comments

RLm 9/2/75

Species	Number Observed M	F	Juv	Unkn	Notes
Mallard				6	all adults
Killdeer				2	both adults
Solitary sandpiper				1	an adult

RECSP PROGRESS REPORT

[illegible]

WATERFOWL COUNT RESULTS - FIELD DATA FORM Bob McGregor along 9/1/9C

Project 83 Date 8/20/75 Observer P. Kennedy

Pond Stake Springs Time 0630-0645 Wind 0-5 mph Temp 55° - 60°F

Percent Sky Overcast 100 Comments

Pm 9/2/75

Species	Number Observed M	F	Juv	Unkn.	Notes
Mallard				1	adult

RBOSP PROGRESS REPORT

(C1)

[illegible]
Bob McGregor
along - 9/1/75

WATERFOWL COUNT RESULTS - FIELD DATA FORM

Project 83 Date 8/20/75 Observer P. Kennedy
Pond Stake Springs Time 1145-1200 Wind 0-5mph Temp 80°F
Percent Sky Overcast 80 Comments Pym 9/2/75

Species	Number Observed M	F	Juv	Unkn	Notes
Mallard				6	all adults

WATERFOWL COUNT RESULTS - FIELD DATA FORM

Project 83 Date 8/20/75 Observer P. Kennedy
Pond Stake Springs Time 1915-1930 Wind 0-5 mph Temp 65-70°F
Percent Sky Overcast 100 Comments
Tlm 9/2/75

Species	Number Observed M	F	Juv	Unkn	Notes
Mallard				4	all adults

[illegible]OSP PROGRESS REPORT
SCI

83.C.9

Shorebird WATERFOWL COUNT RESULTS - FIELD DATA FORM

Project 83 Date 8/21/75 Observer P. Kennedy
Pond Stake Springs Time 0715-0730 Wind 0-5mph Temp 65°F
Percent Sky Overcast 100 Comments

TM 9/2/75

Species	Number Observed M	F	Juv	Unkn.	Notes
Mallard				35	all adults

REOSP PROGRESS REPORT

GT

C 9.4.4.1.1

AERIAL RAPTOR CENSUS REPORT AND SUMMARY FORM

R Dm 7/21

Project/Study 83/61 Date Flown 6/26/75 Survey Area 19 N-S Big Game Transects

Observers: R C. Kling L D. Knutson Pilot/Aircraft L. Paur/ Cessna 150

Time: Start 0649 Finish 9:23 [✓ Est]. Ground Speed 80 mph Indicated Altitude ^750'

Weather: Temperature 35°/38°F Wind Lt Variable Percent Cloud Cover 0/10 %

Air Excellent Light Excellent Analyst D. Knutson

RAPTORS NOTED ON BIG GAME AERIAL SURVEY 6/26/75

Species	Number			Location			Notes and Comments
	Adlt.	Imm.	Unkn	Section	Town.	Range	
Am. Kestrel	1			NW¼ 24	1S	99W	T. 9
Am Kestrel	1			NW¼ 14	1S	99W	T 11
Coopers hawk	1			NE¼ 3	1S	99W	Turn Around 12→13
Am Kestrel	1			NE¼ 3	1S	99W	" " "
Am Kestrel	1			NE ¼ 22	2S	99W	Perched T 13
Raven	1			NW ¼ 33	2S	99W	Turn Around 3→4
Raven	1			SW ¼ 9	1S	98W	
Raven	1			NW¼ 14	1S	99W	
Raven	1			SE¼ 35	1S	100W	
Raven	2			NW¼ 23	2S	100W	
Sparrow hawk	1			SW¼ 26	1S	100W	

RLOSP PROGRESS REPORT

AERIAL RAPTOR CENSUS REPORT AND SUMMARY FORM

Rgm 7/21

Project/Study 83/66 Date Flown 6/26/75 Survey Area A N-S Transects

Observers: R D VanHorn L C. Kling Pilot/Aircraft J. Baer / Cessna 206U

Time: Start 11:20 Finish 1300 Est. Ground Speed 85-95 mph Altitude 150-250 ft

Weather: Temperature 50° Wind 0-5 Percent Cloud Cover 0%

Air Moderate-good Light Excellent Analyst D. VanHorn

6-26-75

Species	Number			Location			Notes and Comments	
	Adlt.	Imm.	Unkn	Section	Town.	Range		
Red tailed hawk	1			SW1/4 27	1S	98W	Perched	T1
Raven, common	2			SW1/4 15	2S	98W	Flying	T1
Am. Kestrel	1			SE1/4 6	2S	98W	Flying	T4
Common Raven	1			NW1/4 9	1S	99W	Flying	T8
mon Raven	1			NW1/4 9	1S	99W	Flying	T8
ommon Raven	1			SE1/4 30	1S	99W	Flying	T10
ommon Raven	1			SE1/4 36	1S	100W	Flying	T11
ed tailed Hawk	1			SE1/4 34	1S	100W	Flying	T13
ed tailed Hawk	1			SW1/4 33	1S	100W	Flying	T14

83.C 9.4.4.11

AERIAL RAPTOR CENSUS REPORT AND SUMMARY FORM

Project/Study 83/66 Date Flown 8/18/75 Survey Area Tract C-a and surrounding area

Observers: R Front - Pat Kennedy L rear - Craig Kling Pilot/Aircraft Len Pace / Cessna 206

Time: Start 1207 Finish 1340 ~~Est.~~ Indicated Air ~~Ground~~ Speed 90-100 mph Altitude 150-200 ft.

Weather: Temperature 75°F Wind 15-20 mph Percent Cloud Cover 05% - see transcript

Air Bouncy Light Good Analyst Pat Kennedy Craig Kling

PKm 9/2/75

	Number			Location			
Species	Adlt.	Imm.	Unkn.	Section	Town.	Range	Notes and Comments
nerican Kestrel	1			10	2S	98W	T. 1. Kestrel observed near pipe line N. of Ryan Gulch. One coyote observed at same location.
's Hawk			1	16	2S	98W	T. 2 Perched in a pinyon tree, south of Ryan Gulch.
erican Kestrel			1	9	2S	98W	T. 2 Flying in Ryan Gulch
d. accipiter			1	8	1S	98W	T. 3. South of Duck Creek
lden Eagle		1		35	2S	99W	Between T. 5 and T. 6 Flapping rapidly at southern transects boundary
id. Falcon			1	11	1S	99W	T. 6. Flying rapidly above a P-J grove North of cabin on Big Duck Creek
nerican Kestrel	1			9	1S	98W	Flying near Duck Creek
d-tailed Hawk	1			4	2S	99W	Soaring over ridge top

ECI

C.4.7.2.2.1

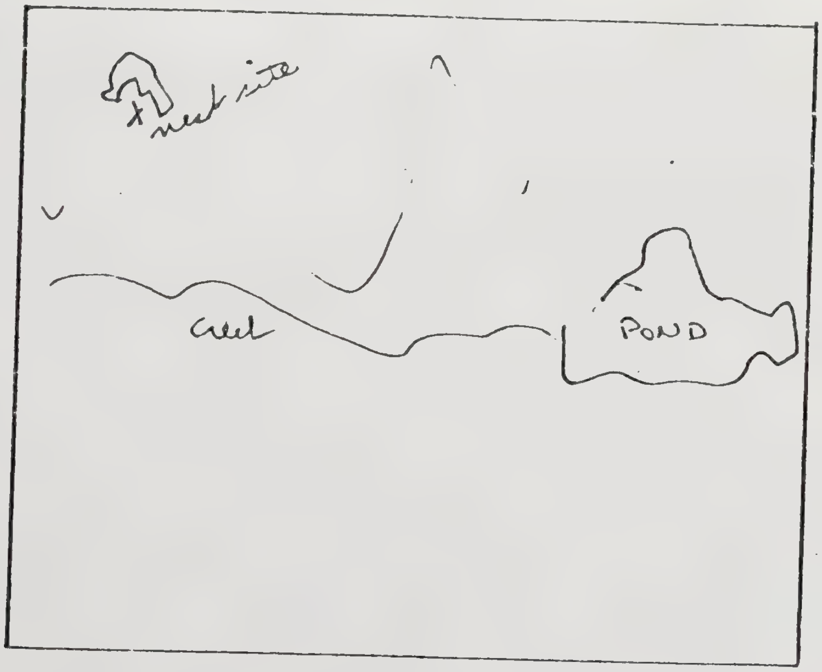
ecology consultants

AVIAN NESTING RECORD

Species Cliff Swallow w Area Trout Cr-n RMA 7/21 Nest No. 7,30

Date 6-5-75 Observer Van Horn

Nest Location



Nest Type

Substrate

Rim height (cm)

Comments:

Nest construction underway. Nests located ~ 30 m up (North) hill side; situated on overhanging erosion area

Date	Eggs	Nestlings	Age	Comments

83.C.7.4.2.5.7
-31

ecology consultants

AVIAN NESTING RECORD

RMM 7/21

Species Golden eagle

Site Cathedral Ridge

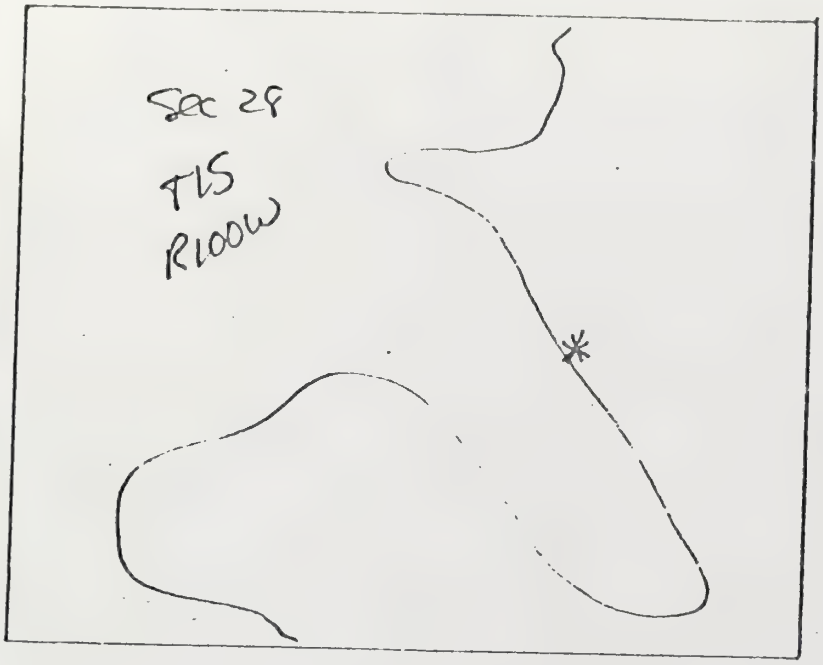
Nest No. 31

Date 6-27-75

Observer VanHolen

Project 83

Nest Location



Nest Type ~~Stick~~ Cliff

Substrate Stick

Rim height (cm) 21.5 CM

Comments: nest located during aerial survey 6/26/75

← Sketch in nest location relative to identifiable landscape features, grid syst or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
6-27	0	1	6 weeks	

-30

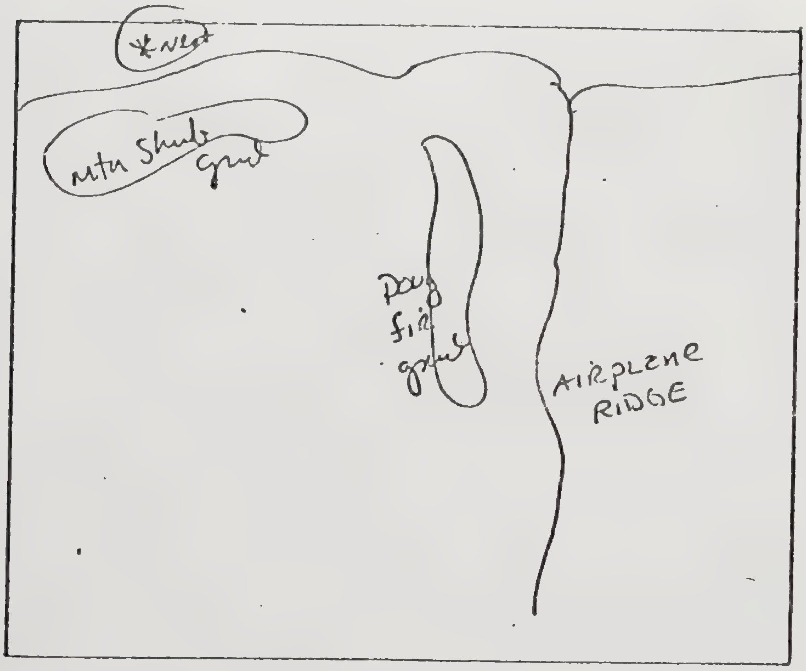
AVIAN NESTING RECORD

ecology consultants

Species American kestrel Site Cathedral ridge RDM 7/21 Nest No. 3

Date 6-27-75 Observer Van Horn Project 83

Nest Location


*Nest
mtn Shrub grid
Doug fir grid
AIRPLANE RIDGE

Nest Type Pine snag - cavity

Substrate tree debris

Rim height (cm) 0

Comments:

← Sketch in nest location relative to identifiable landscape features, grid syst or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
6-27	0	2	1 week	

83.C.7.4.2.2.1 ECI

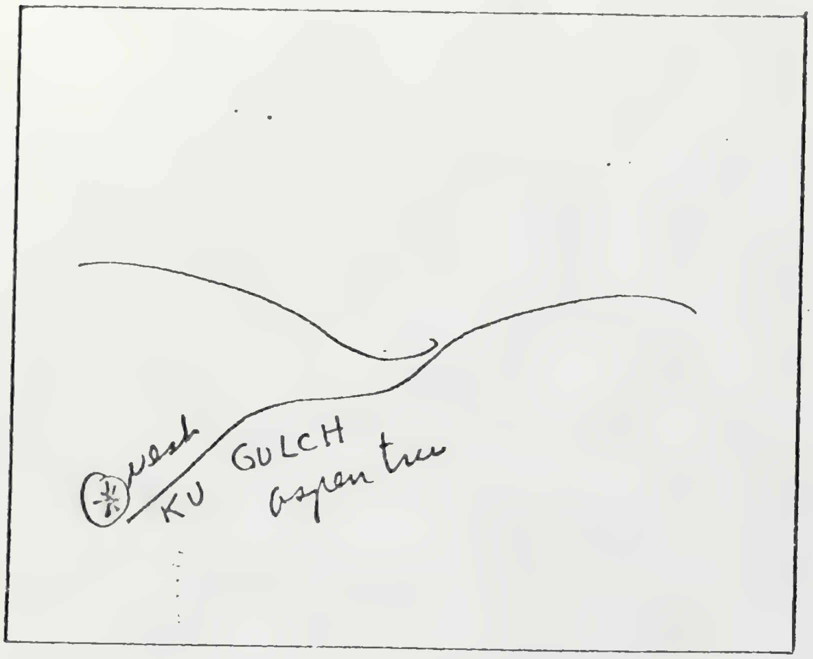
ecology consultants,

AVIAN NESTING RECORD

Species Goshawk Site Cathedral Ridge RDM 7/21 Nest No. 29

Date 6-27-75 Observer Van Hoen Project 83

Nest Location



Nest Type Tree

Substrate Stick

Rim height (cm) 6 cm

Comments: in aspen

← Sketch in nest location relative to identifiable landscape features, grid system or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
6-27	0	1	one week	(no contour feathers as yet)

83.C.7.4 -28

ecology consultants

AVIAN NESTING RECORD

Species Cooper's hawk

Site Cathedral Bluffs RDM 7/21

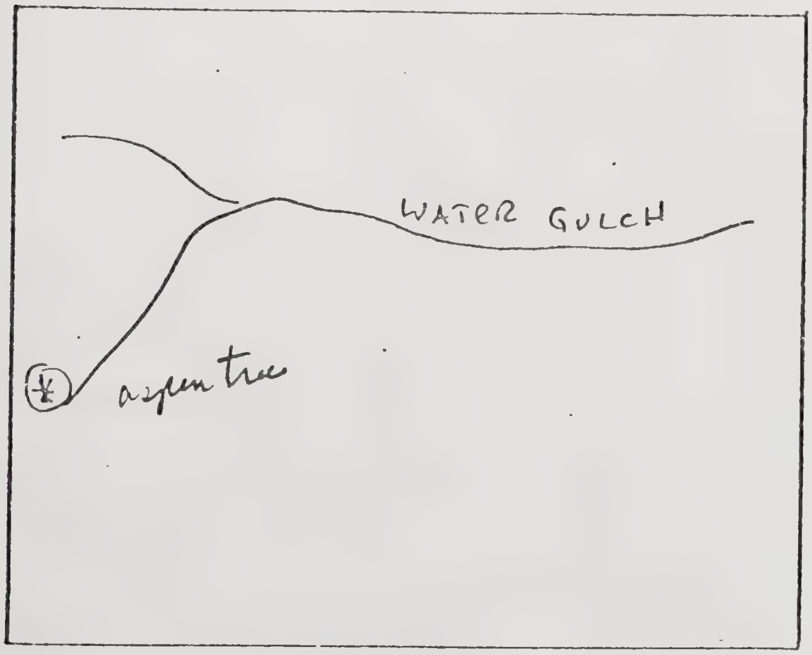
Nest No. 28

Date 6-27-75

Observer Van Horn

Project 83

Nest Location



Nest Type Tree

Substrate Stick

Rim height (cm) 3 cm

Comments: —

← Sketch in nest location relative to identifiable landscape features, grid system or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
6/27	0	2	2 weeks (± 2 days)	

83.C.9.4322.1
-27 ECI

AVIAN NESTING RECORD

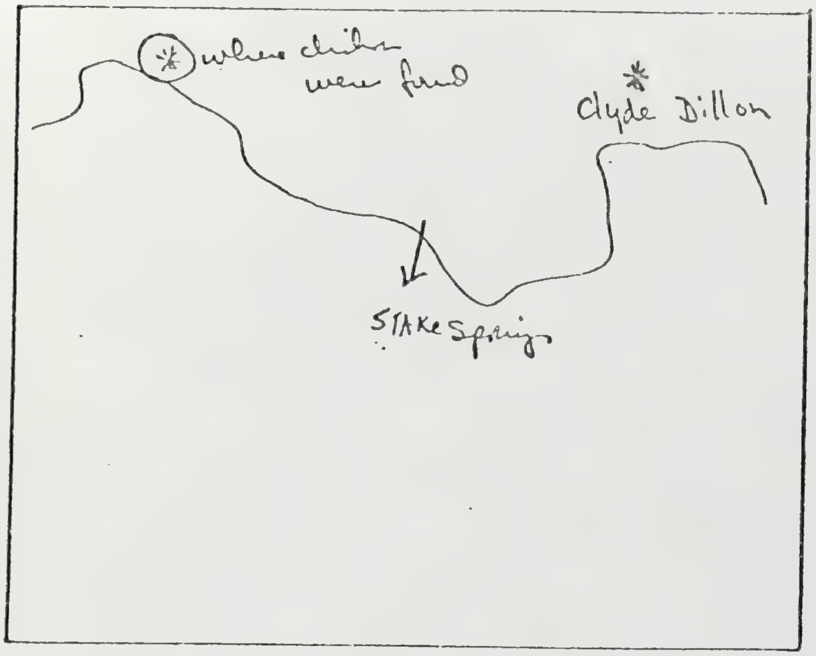
oology consultants, i

RDM 7/21

Species Marsh hawk Site Cathedral Bluffs Nest No. 27

Date 6-27-75 Observer Van Horn Project 83

Nest Location



where chicks were found
Clyde Dillon
STAKE Springs

Nest Type unknown

Substrate unknown

Rim height (cm) 0 unknown

Comments:

chicks found wandering through habitat.

← Sketch in nest location relative to identifiable landscape features, grid system, or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
6-27	0	4	25 days ± 4 days (away fm nest)	

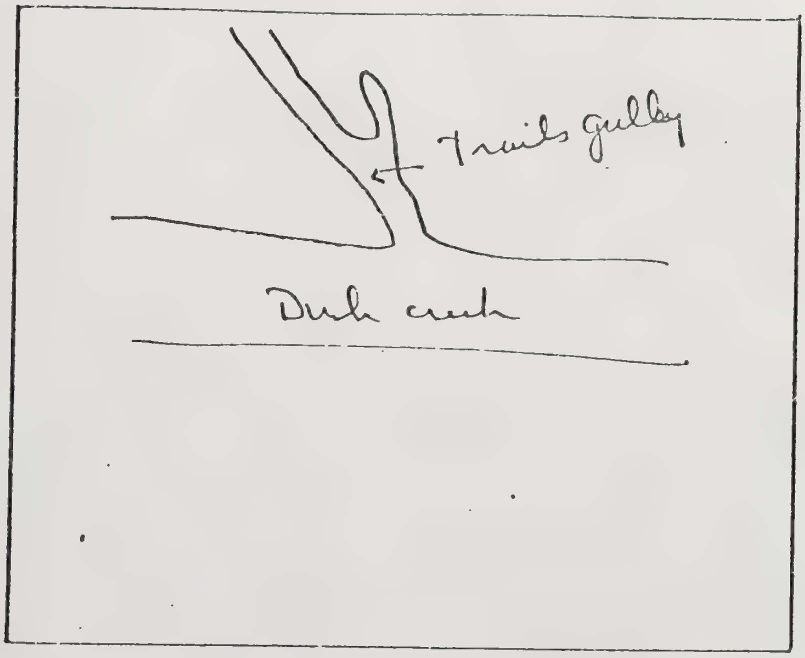
83.C.5.4.2.2.1
26

ECI ecology consultants,

AVIAN NESTING RECORD

Species Golden eagle
Site Duck Creek RDM 7/21
Nest No. 26
Date 6-25-75
Observer Van Horn
Project 83

Nest Location



Nest Type Cliff
Substrate Stick
Rim height (cm) 16 CM
Comments:

← Sketch in nest location relative to identifiable landscape features, grid system, or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
/25	0	1	6 weeks	
6/26	0	0		Eaglet not in area, as determined by aerial flight over nest.

83.0.9.4.2.2.1
.25

oology consultant

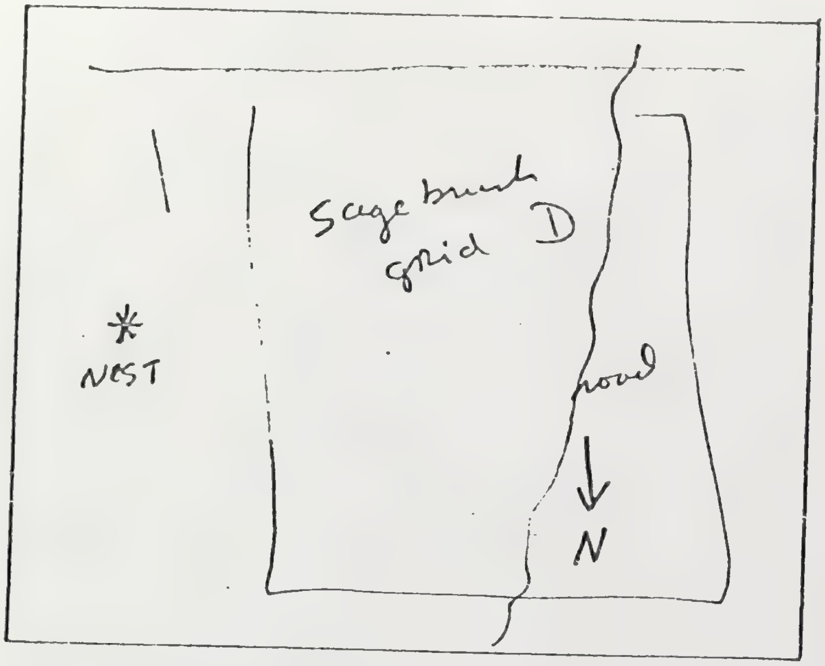
AVIAN NESTING RECORD

RDM 7/21

Species American kestrel Site Sage Grid D Nest No. 2

Date 6-11-75 Observer Van Horn Project 83

Nest Location



Nest Type Pine Snag - Cavity

Substrate tree debris

Rim height (cm) —

Comments: —

← Sketch in nest location relative to identifiable landscape features, grid syst or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
11/75	0	2	3 weeks old	

83.C.9.4.2.2.1

ecology consultants.

AVIAN NESTING RECORD

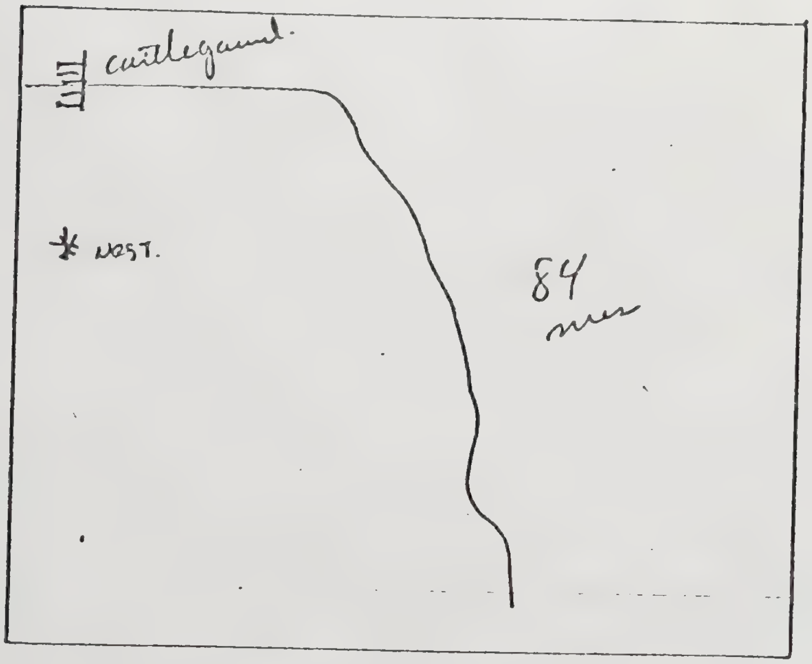
Species Coopers hawk Site 84 mesa

RDM 7/21

Nest No. 24

Date 6-11-75 Observer Van Horn Project 83

Nest Location



Nest Type Pine (pinyon)

Substrate stick

Rim height (cm) 2.5 cm

Comments: —

← Sketch in nest location relative to identifiable landscape features, grid system or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
6-11-75	2	1	3 days (±1)	

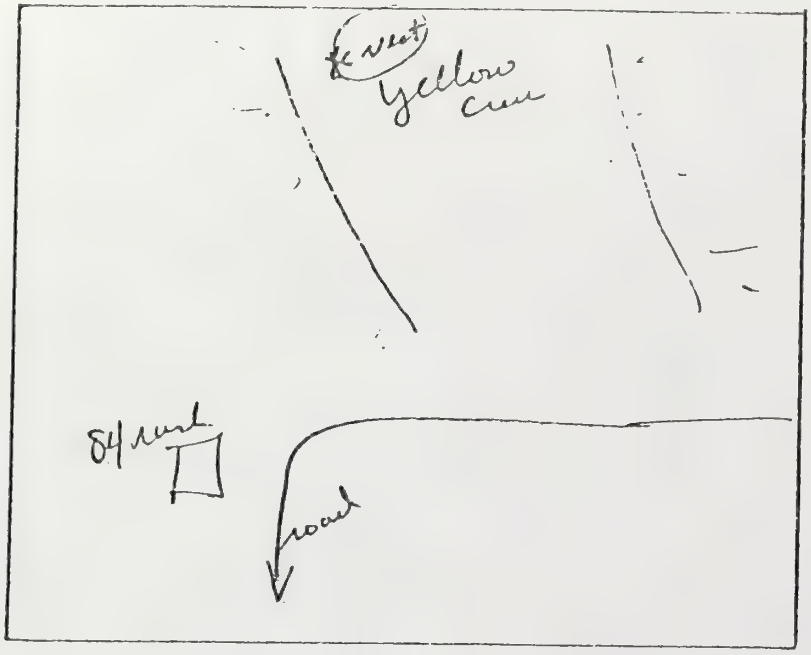
83.C.7.92.3.1
-23 (ECI)
ecology consultants,

AVIAN NESTING RECORD

Species Marsh hawk Site 84 Mesa Ranch P.Dm 7/21 Nest No. 23

Date 6-11-75 Observer Van Horn Project 83

Nest Location



Nest Type ground

Substrate grass & small twigs

Rim height (cm) 0.5 cm

Comments:

← Sketch in nest location relative to identifiable landscape features, grid system, or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
6/11/75	0	3	2 to	3 weeks (birds away from nest)

83.C.9.422.1
-22

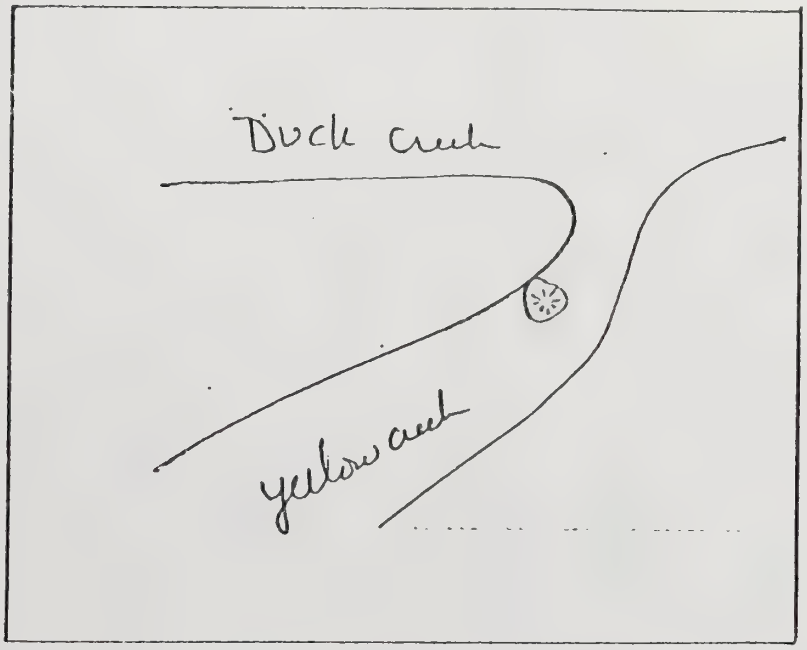
ecology consultants
RVin 7/21

AVIAN NESTING RECORD

Species Marsh hawk Site Mouth of Duck Creek Nest No. 22

Date 6-11-75 Observer Van Horn Project 83

Nest Location



Nest Type ground

Substrate grass

Rim height (cm) 1.0

Comments:

← Sketch in nest location relative to identifiable landscape features, grid syst or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
6/11/75	-0-	4	2 to	3 weeks (± 3 days) Birds away fm

83.C.7.7.a.2.1-21 ECI

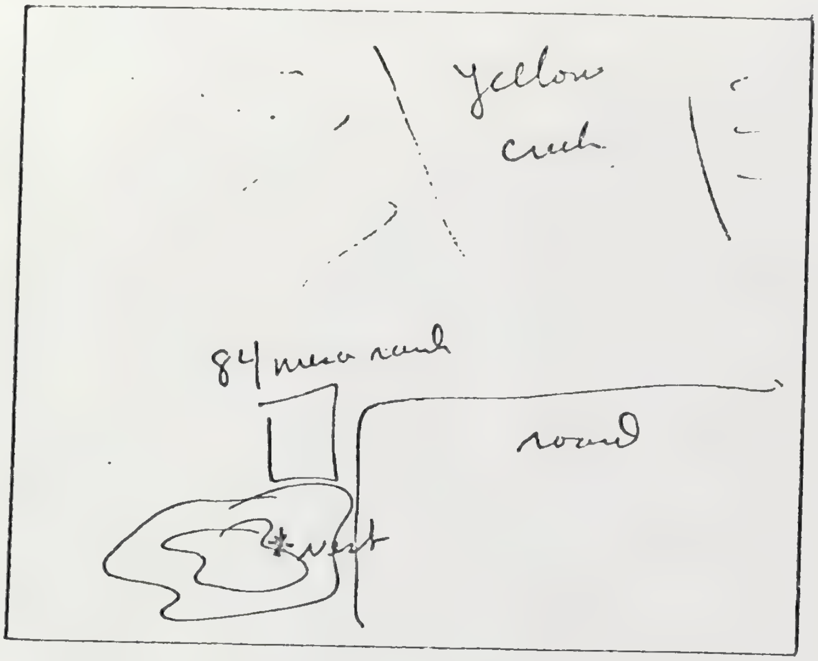
AVIAN NESTING RECORD

oology consultants,

Species American kestrel Site 84 Mesa Ranch RDM 7/21 Nest No. 21

Date 6/1/75 Observer Van Horn Project 83

Nest Location



Nest Type Cliff

Substrate dirt

Rim height (cm) 0 ?

Comments:

← Sketch in nest location relative to identifiable landscape features, grid system or vegetation pattern.

Date	Eggs	Nestlings	Age	Comments
6/1/75	0	3	2 weeks	

C.9.3.2-

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QUALITATIVE AVIAN RECORD

Date June 5, 1975 Observer VanHorn Page 1 of 3 Project 83-05

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	STAKE SPRINGS POND #2, ROAD		1000	Clear	72°F	0-5
	TO POND, ACROSS E end.					
Rough-winged Swallow		II				
Song Sparrow		III				
Blue-gray gnatcatcher		II				
Brewer's SPARROW		IIII				
Mourning dove *	(on HILL - P-J / NORTH SLOPE, S of SUR)	II				
Green - tailed Towhee		I				
Red-winged Blackbird		I				
Cliff swallow		II				
Tree Swallow		II				
Violet-green Swallow		I				
Yellow warbler		I				
Brewer's Blackbird		IIII	1012			
	P-J, west slope, SOUTH		1420	Clear	80°F	
	OF STAKE SPRINGS	II				
Black-throated Gray Warble		I				
Plain Titmouse		I				
Solitary Vireo		II				
Brewer's Sparrow	} in sage along edge	I	1445			
Vesper Sparrow						

C.9.5.2-

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QUALITATIVE AVIAN RECORD

Date June 5, 1975 Observer Van Horn Page 2 of 3 Project 83-05

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	Sagebrush- Rabbit -Greasewood		1540	O	30°C	0-5
	Gulley Site					
1 Rock Wren	(on edge of erosion area)	1				
Brewer's Sparrow		1	1548			

C.9.5.2

QUALITATIVE AVIAN RECORD

Date June 5, 1975 Observer Van Horn Page 3 of 3 Project

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	N. Van Horn Gulley		1615	0%	30°c	0-5
Violet Green swallow		11				
Brewer's sparrow		1111				
Green-tailed towhee		11				
Rock wren		1				
Common flicker		1	1630			
Cliff swallow		12-15	1630			

C.9.5.2-

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QUALITATIVE AVIAN RECORD

Date June 6, 1975   Observer Van Horn   Project

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	Transect #9 (old one)		0913	0%	24°C	0-5
Green-Tailed Towhee	250 m	IIII				
Common Flicker		I				
Blue Gray Gnatcatcher		III				
Common Nighthawk		I				
Chipping Sparrow		III				
Brewer's Sparrow		𝍸				
Vesper Sparrow		I				
Pinyon Jay		I				
Bluebird, Mtn.		I	0940			
	Meadow 230 m		1015	0/10	21°C	0-5
HORNED LARK		𝍸				
VIOLET GREEN SWALLOW		III				
UNID HUMMINGBIRD		I				
VESPER SPARROW		I	1035			
	mixed brush-sage		1040	10%	23°C	0-5
VESPER SPARROW		IIII				
BROAD-Tailed HUMMER		[illegible]				
BREWER'S SPARROW		III				
GREEN-tailed towhee		𝍸				
CHIPPING SPARROW		I	1058			

C.9.5.2-[illegible]

QUALITATIVE AVIAN RECORD

Date 6-10-75 Observer Van Horn Page 1 of 1 Project 83-05

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	Sagebrush Corral Gulch		1630	80%	19°C	0-5
BREWER'S SPARROW		///				
GREEN-TAILED TOWHEE		/				
MOUNTAIN Bluebird		//	1645			
	N slope P-J CORRAL gulch		1710	80%	19°C	0-5
MOURNING DOVE		////				
BLACK THROATED GRAY WAR		//				
GREEN TAILED TOWHEE		///				
RED-TAILED HAWK		/	1730			
	MOUNTAIN BRUSH IN		1750	80%	20°C	0-5
	CORRAL GULCH					
Rufousided towhee		/				
Green tailed towhee		//				
Vesper SPARROW		/	1810			
	P-J MIXED SAGE IN		1840			
	DRY FORK					
BREWER'S SPARROW		/	1850			

C.9.5.2-

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OBSERVATIONS DURING TRAVELS

QUALITATIVE AVIAN RECORD

[illegible]

Date June 11, 1975

Observer VanHorn

Project 83-05

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
American Kestrel	Corral Gulch (NEST)	II				
American Kestrel	Cathedral Bluffs (NEST)	IIII				
Marsh Hawk	Cathedral Bluffs (NEST)	II				
Golden eagle	Corral Gulch + Yellow CK	I				

C.9.6.2

ecology c[illegible]ultants, inc.

QUALITATIVE AVIAN RECORD

Date 6-11-75 Observer VAN HORN PAGE 1 OF ~~3~~ 4 Project 83-05

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	SOUTH-SLOPE PJ IN		1108	0%	21°C	0-5
	STAKE SPRINGS					
SCRUB JAY		I				
MOUNTAIN BLUEBIRD		II				
BLUE GREY GNATCATCHER		I				
COMMON FLICKER		I	1125			
	NORTH SLOPE P-J IN		1128	0%	20°C	0-5
	CORRAL GULCH					
~~Bl~~ BLACK THROATED GRAY		III				
MOURNING DOVE		I				
PLAIN TITMOUSE		II				
MOUNTAIN BLUEBIRD		III				
GRAY FLYCATCHER		I				
SOLITARY VIREO		I				
CHIPPING SPARROW		~~IIII~~ I				
HERMIT THRUSH		I				
GREEN-TAILED TOWHEE		IIII	1210			

C.G.S 2-

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QUALITATIVE AVIAN RECORD

Date June 11, 1975

Observer Von Horn PAGE 2 OF ~~3~~ 4

Project 83-05

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	CORRAL Gulch BOTTOM		1340	0%	23°C	0-5
VIOLET GREEN SWALLOW		II				
ROUGH WINGED SWALLOW		卌 II				
BARN SWALLOW		III				
CLIFF SWALLOW		III				
SONG SPARROW		II				
Killdeer	(NEST)	II				
BREWER'S BLACK BIRD	(2 NESTS)	卌 III				
TREE SWALLOW		I				
GRAY FLYCATCHER		II				
RED WINGED BLACKBIRD	(2 NEST)	卌				
WESTERN MEADOWLARK		I	1400			
	SAGEBRUSH - PJ MIXED ON					
	84 MESA		1505	0%	24°C	0-5
MOUNTAIN BLUEBIRD	(NEST)	II				
BLUE GRAY GNATCATCHER	(NEST)	III				
COMMON FLICKER	(NEST)	II				
CHIPPING SPARROW		卌 I	1530			
	P-J SOUTH EXPOSURE ON					
	84 MESA		1537	0%	24°C	0-5
COOPER'S HAWK	(NEST)	I (♀)				
MOUNTAIN BLUEBIRD		II	1555			

C.9.5.2

ecology c[illegible]sultants, Inc

QUALITATIVE AVIAN RECORD

Date June 11, 1975

Observer Ven Horn PAGE 3 OF ~~3~~ 4

Project 83-05

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	SAGEBRUSH 84 MESA ✓		1610	0%	25°C	0-5
Vesper Sparrow		|||				
Lark Sparrow		|				
Brewer's Sparrow		卌 卌 ||	1623			
	SAGEBRUSH 84 MESA ✓		1640	0%	24°C	0-5
Brewer's sparrow		卌 |				
Blue-gray gnatcatcher		||				
Vesper Sparrow		|||				
Baird's sparrow		||	1658			
	SAGEBRUSH W/ SCATTERED PJ					
	84 MESA		1715	0%	24°C	0-5
Brewer's sparrow		卌 |				
Lark Sparrow		||				
Mountain Blue Bird		|||				
Green-tailed towhee		|	1728			
	HUNTING CLUB P-J ✓		1758	0%	22°C	0-5
Say's Phoebe	(NEST)	||				
House wren	(NEST)	||				
Barn swallow		||				
Chipping sparrow		|||	1820			

C.9.5.2 -

ecology c[illegible]ultants, inc.

QUALITATIVE AVIAN RECORD

Date 6-11-75 Observer VenHorn Page 4 of 4 Project 83-05

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	STAKE SPRINGS - CORRAL GULCH					
	AND YELLOW CREEK					
	CONFLUENCE - NIGHT					
	(QUAL. for Poorwill + Night					
	hawk		2155	0%	20°C	0-5
Poor will	(heard)	|||				
Night-hawk (common)		𝍸 |				
Great horned owl	(heard) + observed	||				

C.9.5.2-

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QUALITATIVE AVIAN RECORD

Date 6-12-75 Observer Van Horn PAGE 1 of Project 83-05

<table>
<tr><th>Species</th><th>Location and Habitat Type</th><th>Number</th><th>Time</th><th>Sky</th><th>Temperature</th><th>Wind</th></tr>
<tr><td></td><td>Mtn Shrub - Swizer gulch</td><td></td><td>1305</td><td>20%</td><td>22°C</td><td>0-5</td></tr>
<tr><td>Western Tanager</td><td></td><td>||</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Green-Tailed Towhee</td><td></td><td>||||</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Rufous-sided Towhee</td><td></td><td>||</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Chipping Sparrow</td><td></td><td>𝍸</td><td></td><td></td><td></td><td></td></tr>
<tr><td>House Wren</td><td></td><td>||</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Vesper Sparrow</td><td></td><td>|</td><td>1320</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Upland meadow - Cath Ridge</td><td></td><td>1410</td><td>30%</td><td>21°C</td><td>0-5</td></tr>
<tr><td>Horned lark</td><td></td><td>𝍸||</td><td>1420</td><td></td><td></td><td></td></tr>
<tr><td>Vesper Sparrow</td><td></td><td>||</td><td>1428</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Mtn Shrub - Cath Ridge
SOUTH SLOPE</td><td></td><td>1450</td><td>30%</td><td>20°C</td><td>0-5</td></tr>
<tr><td>Green Tailed towhee</td><td></td><td>|||</td><td></td><td></td><td></td><td></td></tr>
<tr><td>* Semi Palmated Plover</td><td></td><td>|</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Vesper Sparrow</td><td></td><td>||</td><td>1515</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Upland Meadow Cath Ridge</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Horned Lark</td><td></td><td>𝍸</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Violet green Swallow</td><td></td><td>||||</td><td></td><td></td><td></td><td></td></tr>
<tr><td>White throated swift</td><td>fly over</td><td>|||</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Golden eagle</td><td></td><td>|</td><td>1540</td><td></td><td></td><td></td></tr>
</table>

0.9.5 2-[illegible]

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QUALITATIVE AVIAN RECORD

Date 6-12-75 Observer VanHorn Project 83-05

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	Aspen Cath Ridge		1600	10%	20°C	0-5
Ruby Crowned Kinglet		///				
MacGillivray's Warbler		/				
Red-eyed Vireo		//				
Mountain Chickadee		///				
House Wren		/	1645			

73.C.9.5.2-[illegible]

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RMM 7/21

QUALITATIVE AVIAN RECORD

Date 6-24-75 Observer [illegible] . Hoen Project 73-[illegible]

Species	Location and Habitat Type	Number	Time	Sky	Temperature	Wind
	Pinyon-Juniper (Sa[illegible]) 75		[illegible]	[illegible]	[illegible]	[illegible]
House Wren		////				
Western Kingbird		//				
[illegible] Sparrow		/				
[illegible]-throated [illegible] Warbler		/				
Scrub Jay		/				
White-breasted Nuthatch		/				
[illegible]		/				
[illegible]	Canyon					
[illegible]						
	Pinyon-Juniper (Burned)		0730	20%	21°C	0-5
[illegible]		/				
[illegible] Junco		//				
Brewer's Sparrow		/				
	Sagebrush		[illegible]	20%	21°C	0-5
[illegible]		//				
[illegible]		///				

2.3.8 Reptiles and Amphibians

2.3.8 Reptiles and Amphibians

2.3.8.1 Introduction

No change has occurred since Progress Report-2. See section 3.10.1 in Progress Report-2 for the introduction to the reptile and amphibian section.

2.3.8.2 Methods

2.3.8.2.1 Line Transects and Breeding Site Visits

Line transect methods are employed to sample reptiles and amphibians in all major habitat types on and near Tract C-a. Ten transects, each approximately 1000 m (3820 ft) in length, are surveyed once during June and August 1975 and 1976 by two observers walking far enough apart to preclude duplicate observations. Five transects are permanently located, one in each of the five major vegetation types (pinyon-juniper on north and south facing slopes, sagebrush, greasewood-sagebrush, and mixed brush). Non-permanent transects are relocated during each sampling period such that all vegetation types are sampled at least once during the two-year period. Species, numbers, microhabitat type, sex and age class (when possible), various environmental parameters, and other data are recorded on a standard field data sheet (Figure 2.3-26).

Information regarding nocturnally active amphibian species is gathered opportunistically by ECI field personnel. Two nights during May and June, 1975 and 1976, are devoted to sampling potential amphibian breeding sites (ponds) on and near Tract C-a. Species, numbers, habitat description, sex and age class are recorded on a standard field data sheet (Figure 2.3-27).

The first individual of each species encountered in the area is killed by an injection of phenobarbital and prepared as a voucher specimen.

2.3.8.3 Results

2.3.8.3.1 Line Transects

During June, 1975, 5 permanent herpetofauna transects established within the major vegetation types and 5 non-permanent transects located within selected habitat types were surveyed. The same 5 permanent transects were again surveyed in August, 1975 along with 5 additional non-permanent transects. The locations of all herpetofauna transects sampled are shown in Figure 2.3-28 . Table 2.3-170 lists the species encountered to date and Table 2.3-171 summarizes all data by listing the vegetation types sampled and the number of individuals of each species encountered on each of these transects.

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect #_____ Vegetation Type______________________ Location______________________

Date__________ Time, Ground Temp. at Start__________ Time, Ground Temp. at End______________

Cloud Cover (%)__________ Wind Speed__________ Observer(s)________________ Project________

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*

*Reproductive condition, broken tail, etc.

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Figure 2.3-26. Herpetofauna transect field data sheet for RBOSP.

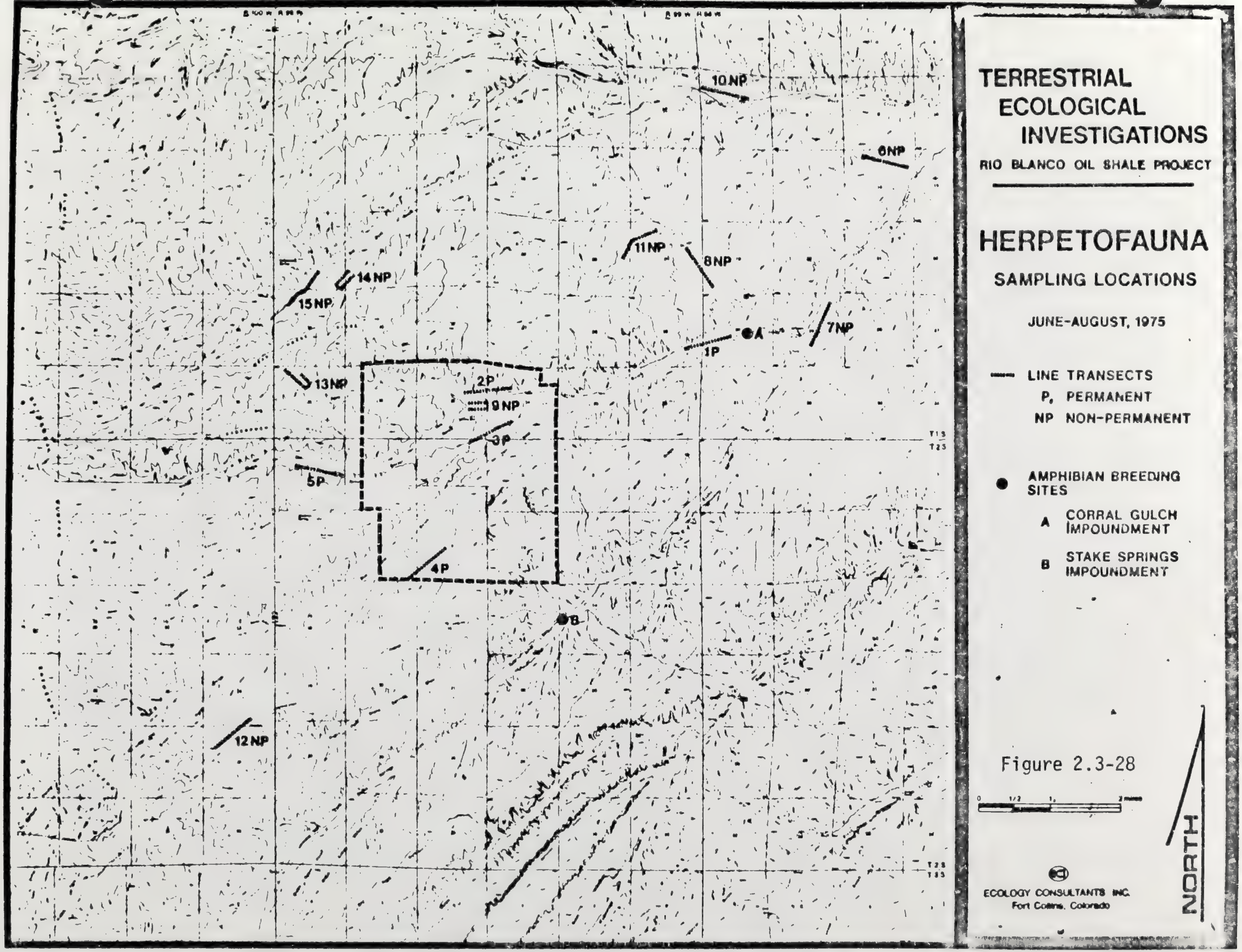
AMPHIBIAN COLLECTION SHEET

Project #:__________

Date	No.	Species	Sex	Age Class	Capture Location	Habitat Description	Collector	Additional Notes *

*Reproductive condition, stomach contents, tail loss, etc.

Figure 2.3- 27. Amphibian collection field data sheet for RBOSP.


10NP
6NP
11NP
8NP
7NP
A
1P
14NP
15NP
13NP
2P
9NP
3P
5P
4P
B
12NP
T1S
T2S
T2S
T3S
0
1/2
1
2 miles
NORTH

TERRESTRIAL ECOLOGICAL INVESTIGATIONS

RIO BLANCO OIL SHALE PROJECT

HERPETOFAUNA

SAMPLING LOCATIONS

JUNE-AUGUST, 1975

— LINE TRANSECTS
P, PERMANENT
NP NON-PERMANENT

● AMPHIBIAN BREEDING SITES
A CORRAL GULCH IMPOUNDMENT
B STAKE SPRINGS IMPOUNDMENT

Figure 2.3-28

ECOLOGY CONSULTANTS INC.
Fort Collins, Colorado

Table 2.3-170. Species of amphibians and reptiles encountered to date in the vicinity of Tract C-a for RBOSP [1]

FAMILY Species	Common Name
AMBYSTOMIDAE	
Ambystoma tigrinum	Tiger salamander
PELOBATIDAE	
Scaphiopus intermontanus	Great Basin spadefoot
HYLIDAE	
Pseudacris triseriata	Chorus frog
IGUANIDAE	
Sceloperus undulatus	Eastern fence lizard
Sceloperus graciosus	Sagebrush lizard
Urosaurus ornatus	Tree lizard
Phrynosoma douglassi	Short-horned lizard
COLUBRIDAE	
Thamnophis elegans	Western terrestrial garter snake

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[1] The following authority was used for amphibian and reptile nomenclature:

Stebbins, R.C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. 279 pages.

Table 2.3-171. Herpetofauna transect results from data collected during June and August, 1975 for RBOSP

Transect Number	Sampling Month (1975)	Vegetation Type (Slope Aspect/Elevation)	Sceloperus graciosus	Sceloperus undulatus	Urosaurus ornatus	Phrynosoma douglassi	Thamnophis elegans
1-P	June	Greasewood/Sagebrush (Flat/6400')	0	0	0	0	0
1-P	August	Greasewood/Sagebrush (Flat/6400')	0	0	0	0	0
2-P	June	Pinyon-Juniper (South/6900')	9	0	0	0	0
2-P	August	Pinyon-Juniper (South/6900')	9	0	0	0	0
3-P	June	Pinyon-Juniper (North/6900')	3	0	0	1	0
3-P	August	Pinyon-Juniper (North/6900')	7	0	0	0	0
4-P	June	Upland Sagebrush (Northwest/7300')	0	0	0	1	0
4-P	August	Upland Sagebrush (Northwest/7300')	0	0	0	2	0
5-P	June	Mixed Brush (North/7300')	0	0	0	0	0
5-P	August	Mixed Brush (North/7300')	0	0	0	0	0
6-NP	June	Pinyon-Juniper/Sagebrush (South/6300')	16	2	4	0	0

Table 2.3-171. (Continued)

Transect Number	Sampling Month (1975)	Vegetation Type (Slope Aspect/Elevation)	*Sceloperus graciosus*	*Sceloperus undulatus*	*Urosaurus ornatus*	*Phrynosoma douglassi*	*Thamnophis elegans*
7-NP	June	Bottomland Meadow (Flat/6300')	0	0	0	0	0
8-NP	June	Upland Sagebrush (Flat/6600')	0	0	0	0	0
9-NP	June	Rabbitbrush (Flat/6700')	0	0	0	0	0
10-NP	June	Shadscale/Sagebrush (South/6400')	0	0	0	0	0
11-NP	August	Pinyon-Juniper/Sagebrush (Flat/6600')	6	0	0	0	0
12-NP	August	Upland Meadow (Flat/8000')	0	0	0	0	0
13-NP	August	Mixed Brush (Southeast/7600')	0	0	0	0	0
14-NP	August	Pinyon-Juniper/Mixed Brush (North/7200')	0	0	0	0	0
15-NP	August	Riparian (Flat/7000')	0	0	0	0	1

Because the survey effort (2 observers) and the transect length (1000 meters) are equal for each sampling location, the results should provide a direct index of relative abundance. The transect surveys conducted this quarter, together with opportunistic observation records and literature review should provide preliminary information regarding distributions and habitat affinities of the reptile and amphibian species sampled.

During the two sampling periods in this quarter a total of 5 reptile species was encountered at six different transects located within three major vegetation types -- pinyon-juniper, sagebrush and riparian. The greatest diversity and abundance of herpetofauna were recorded at Transect 6-NP which traversed a sparse pinyon-juniper habitat situated at the base of south-facing sandstone cliffs. On 9 of the transects surveyed in June and August no reptile or amphibian species were observed. The vegetation types in which herpetofauna were not observed include greasewood/sagebrush (2 surveys), mixed brush (3 surveys), bottomland meadow (1 survey), rabbitbrush (1 survey) and shadscale (1 survey).

The sagebrush lizard (Sceloperus graciosus) was the most frequently encountered species on the herpetofauna transects. A total of 50 lizards of this species was observed or captured during the surveys. Tinkle (1973) refers to the sagebrush lizard as one of the most wide-ranging and abundant lizard species in North America. In the study area the pinyon-juniper vegetation type seems to provide the preferred habitat, for all encounters with this species occurred within this vegetation type. The sagebrush lizard was observed on all but one of the seven surveys in pinyon-juniper. When approached, this species often sought refuge beneath dead-falls and on Transect 6-NP, where numerous sandstone outcroppings were present and where lizard abundance was highest, refuge was often sought in rock crevices as well.

The short-horned lizard (Phrynosoma douglassi) is a wide-ranging, ground-dwelling lizard that inhabits a variety of habitat types within western North America (Stebbins, 1954). In the study area this species is frequently encountered but not as frequently as the sagebrush lizard. Four short-horned lizards were recorded during 3 transect surveys within 2 vegetation types -- pinyon-juniper and sagebrush. Opportunistic sighting records have documented the presence of this species in mixed brush and upland meadow vegetation types as well. Short-horned lizards have also been observed in mixed brush and upland meadow habitats on the Cathedral Bluffs at an elevation of 8400 feet.

Two eastern fence lizards (Sceloperus undulatus) and 4 tree lizards (Urosaurus ornatus) were recorded along Transect 6-NP surveyed in the pinyon-juniper habitat beneath steep south-facing sandstone outcroppings. The eastern fence lizard is similar in appearance to the sagebrush lizard with which it may coexist but remain ecologically distinct in its microhabitat selection, foraging stratagies and diet composition (Turner, 1974). It is more often found perched on elevated structures such as rocks than is the predominantly ground-dwelling sagebrush lizard. The tree lizard climbs more frequently than either of the two Sceloperus species. Neither the tree lizard nor the eastern fence lizard are commonly seen within the study area.

Only one snake, a western terrestrial garter snake (Thamnophis elegans), was encountered during both sampling periods. This species was observed along a transect through riparian habitat. The western terrestrial garter snake occurs in a wide variety of habitats and may be found in dry areas away from permanent water as well as in riparian stiuations where it may be almost entirely aquatic in its habits (Stebbins, 1954). The subspecies in the study area, however, is known to be predominantly terrestrial but to occur in mesic environments (Stebbins, 1954). Sightings of this species to date (3 opportunistic sightings in addition to the one transect sighting) have been in fairly moist areas near water and two of the garter snakes retreated into water when approached.

Reptile species that have been documented in areas contiguous to Tract C-a but have not been encountered in our studies include the gopher snake (Pituophis melanoleucus) and the side blotched lizard (Uta stansburiana) (Thorne Ecological Institute, 1973 and Smith, Maslin and Brown, 1965). The western rattlesnake (Crotalis viridis) has not been encountered during field investigations. The study area is immediately outside of the known distributional range of this rattlesnake so its occurrence is not expected (Smith, Maslin and Brown, 1965).

Amphibian species were not encountered on the herpetofauna transects.

Voucher specimens of the sagebrush lizard, tree lizard and western terrestrial garter snake were collected and preserved.

2.3.8.3.2 Amphibian Breeding Sites

Potential amphibian breeding sites were visited on two nights in June, 1975. Amphibian activity appeared reduced from that observed earlier in May, 1975. Only a few individual chorus frogs (Pseudacris triseriata) were heard calling on one night and on both nights tiger salamander larvae (Ambystoma tigrinum) were observed in the Stake Springs pond. Voucher specimens for these two species were collected during the first sampling period in May, 1975.

2.3.8.4 Summary and Conclusions

Five reptile species were encountered on 20 herpetofauna line transect surveys conducted during June and August, 1975. The sagebrush lizard appears to be the most abundant reptile species in the study area; 50 of these lizards were observed or captured on six surveys at four different locations. The other reptile species encountered, but in fewer numbers, were the eastern fence lizard, tree lizard, short-horned lizard and western terrestrial garter snake. Greatest abundances of lizards were observed on transects within the pinyon-juniper vegetation type.

2.3.8.5--REPTILES AND AMPHIBIANS RAW DATA

2.3.8.5--REPTILES AND AMPHIBIANS RAW DATA

direction 232° ends at well.

83.C.10.2.2.1

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 1 Vegetation Type Greasewood flat Location begins [illegible] ends [illegible]

Date 20 [illegible] Time, Ground Temp. at Start [illegible] 69° Time, Ground Temp. at End [illegible]

Cloud Cover (%) 90% Wind Speed 0-5 Observer(s) Turner Bailey Project 83

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	[illegible] Additional Observations*
No herptile	observed!				

*Reproductive condition, broken tail, etc.

[illegible] 33.0.10.2 [illegible]

ends just below prominent outcrops

HERPETOFAUNA TRANSECT FIELD DATA SHEET

begins T1S, R99W, S33 [illegible]

Transect # 2 Vegetation Type Pinyon-Juniper (South Slope) Location ends T1S, R99W, S34 SE¼ [illegible]

Date 21 June 75 Time, Ground Temp. at Start 1130 68° Time, Ground Temp. at End 1300 72°

Cloud Cover (%) 0 Wind Speed 0-5 Observer(s) Sanz, Baker Project 83

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	from 7/21 Additional Observations*
S. graciosus	2.5 meters	on grnd. in sun	♀	Adult	capt pregnant
S. grac	2 "	" " " "	♂	A	capt
S. grac	1 meters	" " " "	?	A	obs.
" "	0 "	" " " "	♀	J.	capt.
" "	1.5 "	" " " "	?	J	obs
" "	2 "	" " " "	?	J	obs
" "	2 "	under shrub (shade)	♀	A	capt pres
" "	1 "	" "	♂	A	~~obs~~ capt
" "	1.5 "	on grnd in sun	?	A	obs

*Reproductive condition, broken tail, etc.

RECSP PROGRESS REPORT

HERPETOFAUNA TRANSECT FIELD DATA SHEET

begins T1S, R99W, S 34 [illegible]
ends T2S, R99W, S 4 NE¼ [illegible]

Transect # 3 Vegetation Type Pinyon-Juniper (North Slope) Location

Date 26 June 75 Time, Ground Temp. at Start 1315 73° Time, Ground Temp. at End 1430 71

Cloud Cover (%) 0 Wind Speed 0-3 Observer(s) Baker, Sanz Project X3

should write out genus name 1st time

ROM 7/21
use this [illegible]

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
P. douglassi	4 meters	on grnd in opn	♂	A	capt.
S. graciosus	3 m.	" " "	?	J	obs
"	2 m	under shrub	♀	A	preg.
S. grac	2.5 m	under shrub	♂	A	capt.

*Reproductive condition, broken tail, etc.

RBOSP PROGRESS REPORT

ends at station 17-3 of 5m nominal grid F3.C.10.2.2.

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 4 Vegetation Type Upland Sage Location begins T2S, R99W, S9, NE¼ [illegible] end T2S, R99W, S8, SE¼ [illegible]

Date [illegible] June [illegible] Time, Ground Temp. at Start 1145 73° Time, Ground Temp. at End 1730 [illegible]

Cloud Cover (%) 0 Wind Speed 5-10 Observer(s) Baker, Cray Project [illegible]

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
					Edm 7/21
P. douglassi	2.5 met.	on sand in open	♀	A	capt

*Reproductive condition, broken tail, etc.

RECOP PROGRESS REPORT

91

83.C 10.2.2

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 5 Vegetation Type Mixed Brush (North 2) Location T2S R99W, S6 SE¼ of NE¼

Date 6 June 75 Time, Ground Temp. at Start 1520 74° Time, Ground Temp. at End 1600 76°

Cloud Cover (%) 0 Wind Speed 0-5 Observer(s) [illegible] Project [illegible]

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	RDm 7/21 Additional Observations*
No Herps observed					

---

* Reproductive condition, broken tail, etc.

RDOP PROGRESS REPORT

13.C.10.2.2-6

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 1-11P Vegetation Type [illegible] Location NE S16 T15 R18W

Date [illegible] Time, Ground Temp. at Start 1:00 53°F Time, Ground Temp. at End 1:25 70°F

Cloud Cover (%) 60% Wind Speed 5-10 Observer(s) [illegible] Project 33

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	com 7/21 Additional Observations*
Sceloporus graciosus	2m	on ground in open	♂	Ad	[illegible]
S. graciosus	1.5m	" "	♂	Ad	released - caught
S. graciosus	1 m	" "	♂	Ad	obs. —
S. "	—	" "	?	Ad	obs. not caught
S. "	1.5	on ground under sage	♀	Ad	obs.
Urosaurus ornatus	2	on rock in open	♂	Ad	[illegible]
U. ornatus	2	on ground in open	?	Juv.	obs
S. graciosus	2	on ground in open	♂	Ad	caught
S. grac.	1	on ground in open	?	[illegible]	obs
S. grac.	—	" " " "	♂	Ad	obs.
S. grac.	1	" " "	♀	Ad	obs
S. grac.	2	" " " "	♀?	Juv	obs
U. ornatus	1.5	on rock in open	♂	Ad	caught ad.
S. grac.	1.6	" ground in open	?	Ad	obs
[illegible]	5 m	[illegible]	♀	Ad	obs. — [illegible]
S. grac.	6 m	on ground in open	♂	Ad	[illegible]
S. grac.	0	" " "	♀	Ad	obs
S. grac.	0	" " "	♂	Ad	[illegible]
S. grac.	3 m	" " "	♀	Juv.	caught
U. ornatus	2 m	on dead juniper	[illegible]	Ad	[illegible]
S. grac.	3 m	on ground in open	[illegible]	Ad	
S. [illegible]	2 m	" " " "	?	juv	obs.

*Reproductive condition, broken tail, etc.

[illegible] PROGRESS REPORT

301

83C.10.2.2-7

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect #7-11P Vegetation Type BOTTOMLAND MEADOW Location S29 T1S R93W

Date 6/20/75 Time, Ground Temp. at Start 0840, 55°F Time, Ground Temp. at End 0900 57°F

Cloud Cover (%) 1% Wind Speed <5 mph Observer(s) Turner/Baker Project 93

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	R Dir/[illegible] Additional Observations*
No herpetofauna observed					

* Reproductive condition, broken tail, etc.

RBOSP PROGRESS REPORT
C1

83 C.10.2.2-3

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # [illegible] Vegetation Type [illegible] Location [illegible] Tis [illegible]

Date [illegible] Time, Ground Temp. at Start [illegible] Time, Ground Temp. at End [illegible] 70°

Cloud Cover (%) 50% Wind Speed 0-3 Observer(s) [illegible] Project [illegible]

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
nothing observed					

*Reproductive condition, broken tail, etc.

transects (500 meters in length, parallel to each other and 50 meters apart were run.

83.C.10.2.2

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 9-1 Vegetation Type Rabbitbrush Location NE¼ of SE¼ S33 T1S R98W

Date 24 June 75 Time, Ground Temp. at Start 1425 75° Time, Ground Temp. at End 1500 82°

Cloud Cover (%) 10 Wind Speed 15-20 Observer(s) Baker, Seme Project 83

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Pom 7/81 Additional Observations*
No Herpetiles observed					

*Reproductive condition, broken tail, etc.

EROSP PROGRESS REPT (C)

9.3 C. 10 2.2

HERPETOFAUNA TRANSECT FIELD DATA SHEET begins T15, R93W S7 SW/NE

Transect # 10 Vegetation Type Sage - Shadscale Location ends T15 R93W S7 SW¼

Date 27 June 7? Time, Ground Temp. at Start 1030 78° Time, Ground Temp. at End 1100 78

Cloud Cover (%) 0 Wind Speed 5-20 Observer(s) Baker, Sanz Project

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	RSir 7/81 Additional Observations*
No herps	observed				

* Reproductive condition, broken tail, etc.

[illegible] PROGRESS [illegible]

(1)

83 C [illegible]

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 1-D Vegetation Type [illegible] Location [illegible]

Date [illegible] Time, Ground Temp. at Start 1351 / 27° Time, Ground Temp. at End 1435 / 2[illegible]°

Cloud Cover (%) 75 Wind Speed 5-10 Observer(s) [illegible] Project 83

RCM 8/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
No herps	observed				

*Reproductive condition, broken tail, etc.

[illegible] PROGRESS [illegible]
ecology consultants, [illegible]

[illegible]

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect #2-P Vegetation Type [illegible] Location [illegible]

Date [illegible] Time, Ground Temp. at Start [illegible] / [illegible] Time, Ground Temp. at End [illegible] / [illegible]

Cloud Cover (%) 35 Wind Speed 2-5 Observer(s) [illegible] / [illegible] Project 22

RPm 8/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
[illegible]	.5 meters	[illegible]	U	A	[illegible]
[illegible]	2 meters	" " " "	♀	A	capt.
[illegible]	2 meters	" " " "	U	A	obs.
[illegible]	1 "	" " " "	♀	A	capt.
[illegible]	2 "	" in [illegible]	♀	A	capt.
[illegible]	0 "	" " " sun	♂	A	capt.
[illegible]	1 "	" " " "	♀	A	capt.
[illegible]	.5 "	" " " "	U	A	obs.
[illegible]	.5 "	" " " "	♂	J	capt.

*Reproductive condition, broken tail, etc.

FOSP PROGRESS REPORT

[illegible]

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect #3P Vegetation Type [illegible] Location [illegible]

Date [illegible] Time, Ground Temp. at Start [illegible] / 25° Time, Ground Temp. at End 1210 / [illegible]

Cloud Cover (%) 5 Wind Speed 0-8 Observer(s) [illegible] Project [illegible]

[illegible] 3/[illegible]

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
Sceloporus graciosus	3.5 meters	on sand in sun	♀	A	capt.
[illegible]	3 [illegible]	[illegible]	♂	A	"
S. graciosus	3 "	[illegible]	?	J	
S. graciosus	1 "	on sand under dead fall	U	A	obs.
S. graciosus	3 "	on sand in [illegible]	♂	A	[illegible]
S. graciosus	1 "	" " " "	♂	A	capt.
S. graciosus	0 "	" " " "	♀	A	capt.

*Reproductive condition, broken tail, etc.

RECOSP PROCESS [illegible]

B3.C 10.3.3-11

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 4.P Vegetation Type [illegible] Location [illegible]

Date [illegible] Time, Ground Temp. at Start [illegible] / 22°C Time, Ground Temp. at End 1105 / 20°C

Cloud Cover (%) 40 Wind Speed 2-5 [illegible] Observer(s) [illegible] Project 83

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
[illegible]	.3 m	on grd in sun	U	J	
P. douglasi	1	" " " "	F ♀	A	

* Reproductive condition, broken tail, etc.

[illegible] PROGRESS REPORT

P3 C.10.22-15

HERPETOFAUNA TRANSECT FIELD DATA SHEET

Transect # 5P Vegetation Type [illegible] Location [illegible]

Date [illegible] Time, Ground Temp. at Start [illegible] 24°C Time, Ground Temp. at End [illegible]

Cloud Cover (%) 75 Wind Speed 2 - 8 Observer(s) [illegible] Project 73

RPM 8/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
NONE OBSERVED OR CAPTURED					

* Reproductive condition, broken tail, etc.

[illegible] PROGRESS [illegible]

ECI

ecology consultants, inc.

HERPETOFAUNA TRANSECT FIELD DATA SHEET [illegible]

Transect # 11-N Vegetation Type [illegible] Location [illegible] T15, R95W S [illegible]

Date [illegible] Time, Ground Temp. at Start [illegible] Time, Ground Temp. at End [illegible]

Cloud Cover (%) 85 Wind Speed [illegible] Observer(s) [illegible] Project 73

RMn 9/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
[illegible]	1 meter	[illegible]	♂	A	capt.
S. graciosus	.5 "	" " "	♀	A	Preg. capt.
S. graciosus	.5 "	" " "	U	A	obs.
S. graciosus	[illegible] "	[illegible] "	U	A	obs.
S. graciosus	1 "	under deadfall "	I	A	capt.
S. graciosus	1.5	under deadfall "	U	A	obs.

*Reproductive condition, broken tail, etc.

HERPETOFAUNA TRANSECT FIELD DATA SHEET [illegible]

Transect # 12-7 Vegetation Type [illegible] Location [illegible]

Date [illegible] Time, Ground Temp. at Start [illegible] Time, Ground Temp. at End [illegible]

Cloud Cover (%) 0 Wind Speed 5-10 Observer(s) [illegible] Project [illegible]

[illegible] 8/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
No herps	observed				

*Reproductive condition, broken tail, etc.

[illegible]

from [illegible]

HERPETOFAUNA TRANSECT FIELD DATA SHEET

13 C 10 22-18

ransect # 37 Vegetation Type [illegible] ([illegible]) Location T15, R22E S31 NW¼ [illegible]

ate 7 [illegible] Time, Ground Temp. at Start 1145/27° Time, Ground Temp. at End 1330 28°

loud Cover (%) 25 Wind Speed 3-5 Observer(s) [illegible] Project 85

RLM 8/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
No Herps	encountered				

*Reproductive condition, broken tail, etc.

RBOSP PROGRESS REPORT

eci

ecology consultants inc

HERPETOFAUNA TRANSECT FIELD DATA SHEET 13.C.10.22-19

Transect # 14 [illegible] Vegetation Type [illegible] Location T15, Road S19 [illegible]

Date 17 [illegible] Time, Ground Temp. at Start 15[illegible] 27°C Time, Ground Temp. at End [illegible]

Cloud Cover (%) 35 Wind Speed 5-10 Observer(s) [illegible] Project [illegible]

FBm 9/22

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
No herps	encountered				

*Reproductive condition, broken tail, etc.

[illegible]CSP PROC[illegible] (10)
ecology consultants, inc.

HERPETOFAUNA TRANSECT FIELD DATA SHEET [illegible]

33C [illegible]

Transect #5n Vegetation Type [illegible] Location [illegible]

Date 17 Aug 75 Time, Ground Temp. at Start 1400/33 Time, Ground Temp. at End [illegible]

Cloud Cover (%) 30 Wind Speed 5-8 Observer(s) [illegible] Project [illegible]

LBM 8/22.

Species	Approximate Perpendicular Distance From Transect	Microhabitat Type	Sex	Age Class	Additional Observations*
[illegible]	0 m	on rock in sun	♀	A	

*Reproductive condition, broken tail, etc.

[illegible]

83C.10.1.2[illegible]

REPTILE AND AMPHIBIAN COLLECTION SHEET

roject #: 83

[illegible] weather [illegible]?
and [illegible] at [illegible] / [illegible]

P.M. [illegible]

[illegible]	No.	Species	Sex	Age Class	Capture Location	Habitat Description	Collector	Additional Notes *
3/15	-	pond visited in [illegible]	Hollow	and Stokes Spring	area			
		frogs or toads	Present	on scene - No Tiger	salamanders			
		were observed	in the pond	at Stokes	Springs			
		pond visited at	8:30 -	night was cool	and clear			

roductive condition, stomach contents, tail loss, etc.

RBOSP PROGRESS REPORT

REPTILE AND AMPHIBIAN COLLECTION SHEET

Project #: 23 [illegible]? who?

	No.	Species	Sex	Age Class	Capture Location	Habitat Description	Collector	Additional Notes *
[illegible]/75	0	specimens collected, only Pseudacris triseriata heard calling						
		Corral Gulch and Stakes Spring were visited						
		ponds visited at 2000 - Night [illegible] clear						

*Reproductive condition, stomach contents, tail loss, etc.

RBOSP PROGRESS REPORT

2.3.9 Invertebrates

2.3.9.1 Introduction

The objectives of the terrestrial invertebrate investigations are to collect and identify the abundant invertebrates associated with the major vegetation types, and to qualitatively and quantitatively describe the invertebrates whose hosts are made up of the dominant plant species within these habitats. Data serve as a basis for determination of the role of invertebrates in the ecosystem and a basis for future comparative studies on Tract C-a and the surrounding area.

2.3.9.2 Methods

2.3.9.2.1 Collection of Samples

Field sampling is scheduled at five sties during May, July, and September of 1975 and 1976. The sampling sites were selected so as to concentrate on the major vegetation types found in the area and are located near small mammal grids A, B, C, D and 5 (Figure 2.3-11). These five sites are (1) sagebrush-rabbitbrush (with some greasewood) bottomland, (2) south-facing pinyon-juniper, (3) north-facing pinyon-juniper, (4) upland sagebrush, and (5) mixed brush.

A variety of field sampling techniques was employed to capture invertebrates in different microhabitats at each sampling station, including pitfalls, malaise traps, sweeping, beating, litter D-Vac, and trap D-Vac samples.

Ground dwelling active species are captured and their abundance estimated using a pitfall grid at each sample site (Gist and Crossley, 1973). The fauna of importance in this method consists of those groups which do not fly or hop and are essentially confined to the ground. An area 10 x 10 m was completely enclosed with aluminum border fencing sunken to a depth of two inches in the soil, leaving a 4" barrier above-ground to prevent movement in or out of the area by ground-crawling species. Within the enclosure, 25 pitfalls were placed, evenly spaced where possible, each consisting of a 0.35 l (12 oz) can with both ends removed. The can was placed in the ground with the top rim just below the ground surface and a cup was placed inside. A funnel was also placed inside the can with the stem leading into the cup and the lip of the funnel at ground level (Figure 2.3-29). Captures are dependent on the movement of ground dwelling invertebrates within the grid.

All pitfall traps are checked daily for 10 days during each sampling period. Specimens from each grid are combined. labeled and placed in a standard 70 percent alcohol 3 percent glycerin solution daily.

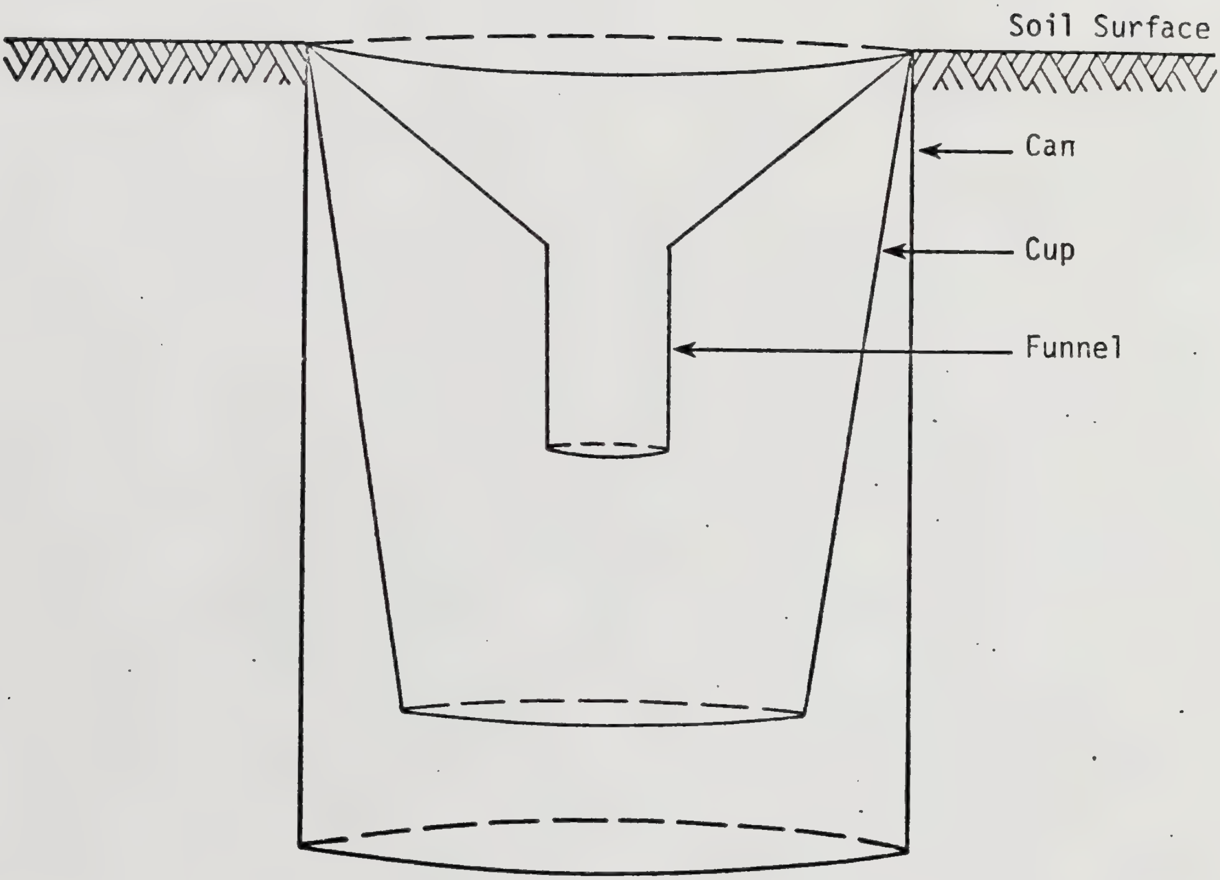
Soil Surface
Can
Cup
Funnel

Figure 2.3-29. Invertebrate pitfall trap used for RBOSP.

Samples are logged into a record book as collected and routed to ECI laboratories for identification and enumeration of the invertebrates.

One malaise trap as described by Townes (1972) was placed at each site to capture mobile airborne species. The trap consists of a tent made of dacron netting (25 meshes per inch) open on two sides and divided in the middle (Figure 2.3-30).

Invertebrates which fly into the trap hit the screen dividing the trap and begin to crawl upward along the screen to the highest point of the tent where they enter a jar containing a standard alcohol-glycerin solution. A wire fence consisting of 4 - 4.5' posts and 2 strands of number 9 guage wire is put up around each trap to prevent interference from ungulates while the traps are operative (the duration of each sampling period).

The trap is designed for flying species such as Diptera and Hymenoptera which exhibit a characteristic upward crawling movement when trapped. Other groups such as Homoptera, Hemiptera, and Coleoptera often drop off the screen and escape by crawling or hopping out. These traps are opened on the first day of sampling and checked daily, with the insects being removed periodically for the duration of the sampling period (about 10 days). Samples are labeled and logged into the record book and transported to the laboratory for identification and enumeration.

Sweep samples are taken from the herbaceous stratum at each site as well as from tall shrubs and trees at Sites 1, 2, and 3. Sweeps are taken with a standard net having a 38 cm diameter opening and 76 cm long bag. Because the vegetation types are such that a regular sweep transect where the collector makes regular 180° back and forth motions cannot be made, a sweep is considered one motion across the plant or plants to be sampled, with 100 of these motions making up the sample from each site. Tall shrub and tree samples are taken in the same manner with 50 sweeps each from pinyon pine (Pinus edulis) and juniper (Juniperus osteosperma) at Sites 2 and 3 and 50 sweeps from sage (Artemesia tridentata) at Site 1. The purpose of the sweep samples is to provide qualitative data on invertebrates in two strata not otherwise being specifically sampled by other techniques. In the herbaceous stratum, the samples reveal invertebrates associated with plant species not being specifically sampled by the trap D-Vac method. In the tall shrub and tree sampling, sweeping and beating provide a sample of the invertebrates not sampled with other proposed methods. The upper portions of these plant specimens may contain invertebrates which when disturbed fly or cling to the vegetation; these are picked up by the sweep net. All sweep samples are labeled and placed in alcohol, logged in the field log book and transported to the lab for analysis.

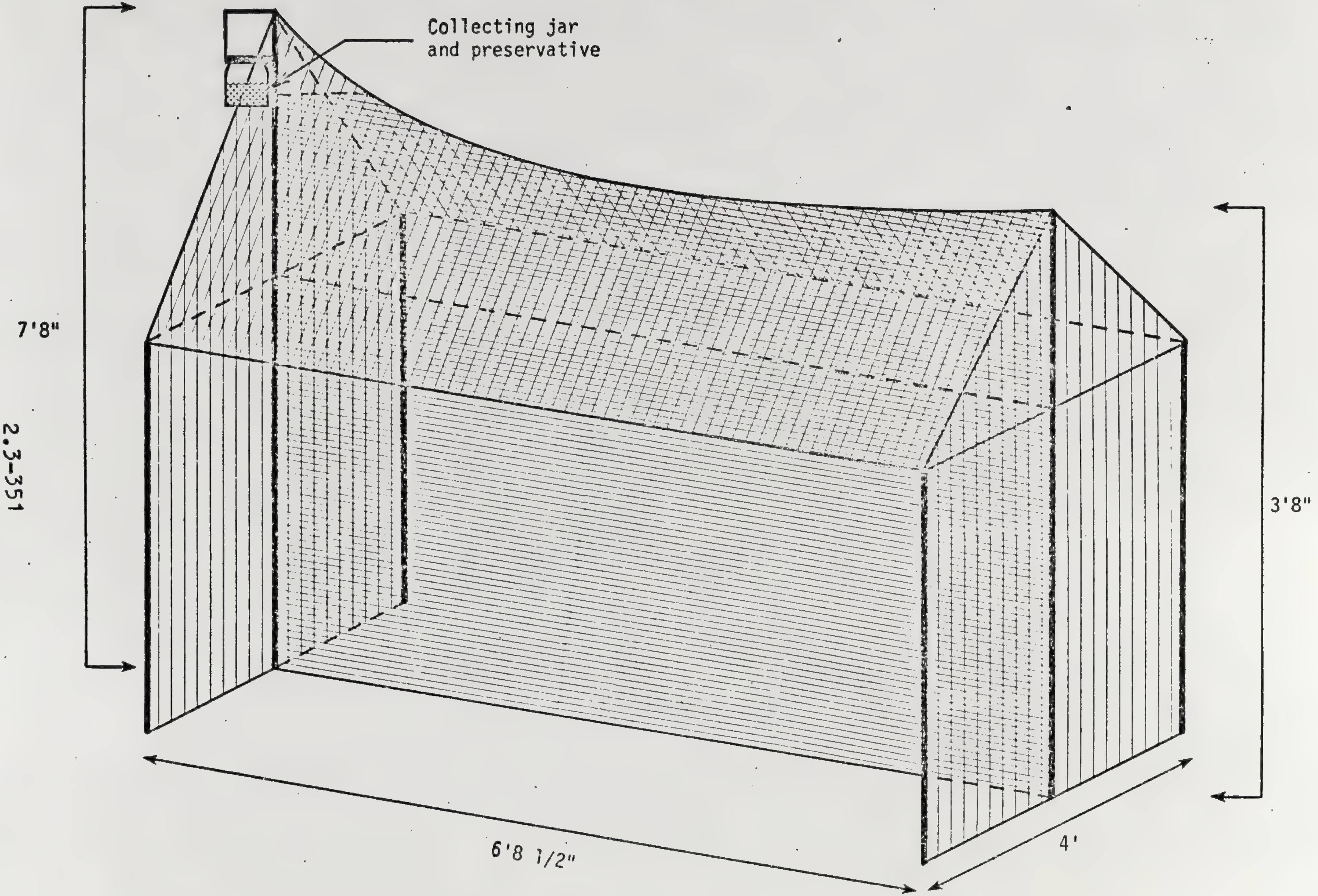
Collecting jar
and preservative
7'8"
3'8"
6'8 1/2"
4'

Figure 2.3-30. Malaise trap used for RBOSP.

Invertebrates which inhabit the tall shrubs and trees may also drop to the ground when disturbed. These are sampled using a beating cloth which is a circular canvas spread under the plant. Vigorous shaking and beating of the plant causes the invertebrates on the vegetation to fall to the canvas after which the resulting litter is removed and transported to the field office and placed in a Berlese funnel.

Each Berlese consists of a sheet metal cylinder 40.6 cm long and 35.5 cm in diameter with a cone of equal diameter and 25.4 cm long attached to the lower end. A jar lid is attached to an opening at the apex of the cone to which sample collecting jars partially filled with a 30 percent alcohol solution are attached. Two grids are placed inside the cylinder upon which the samples are placed. The remaining open end of the cylinder is covered with a cone 5.2 cm high containing a light bulb socket (Figure 2.3-31). The sample is placed in the refrigerator prior to being put in the Berlese to decrease invertebrate activity. It is then dumped onto the grid in the cylinder and the top cone, containing an illuminated 60 watt bulb, is placed over the cylinder. The heat from the bulb causes the debris to become hot and dry whereupon the invertebrates tend to move downward to escape, eventually falling into the jar containing alcohol. Samples are placed in the Berlese on the same day they are taken. All samples are exposed to the Berlese treatment for 48 hours to 60 hours depending on the depth of the litter.

Two beating samples are taken from big sagebrush at Site 1 and two each from pinyon and juniper at Sites 2 and 3 during each sampling period.

Invertebrates inhabiting the ground litter are sampled using a commercial vacuuming unit and a cylinder open on both ends. The cylinder is placed down on the ground surface and all litter and loose soil vacuumed from the area inside. The sample is placed in a muslin bag, labeled, recorded in a log book and transported to the field laboratory for Berlese treatment. After Berlese extraction for 60 hours, the litter is weighed to determine the abundance of invertebrates per gram of dry litter. One of the 5 samples taken from each site is placed in a standard alcohol-glycerin solution after weighing for transport back to the ECI laboratory. This sample is hand-picked to determine the efficiency of extraction by Berlese. Efficiency is read as a percentage equalling the number of invertebrates collected in Berlese treatment divided by the number collected in Berlese treatment plus the number found in hand picking the remains. This calibration is performed only during the first and last sampling periods of each year.

Invertebrate species found in association with dominant shrub species at each sample site are sampled using a trap and a commercial vacuuming unit. The trap consists of a square metal frame covered with #60 mesh screen and enclosing an area of 0.5 m^2 which is placed over the

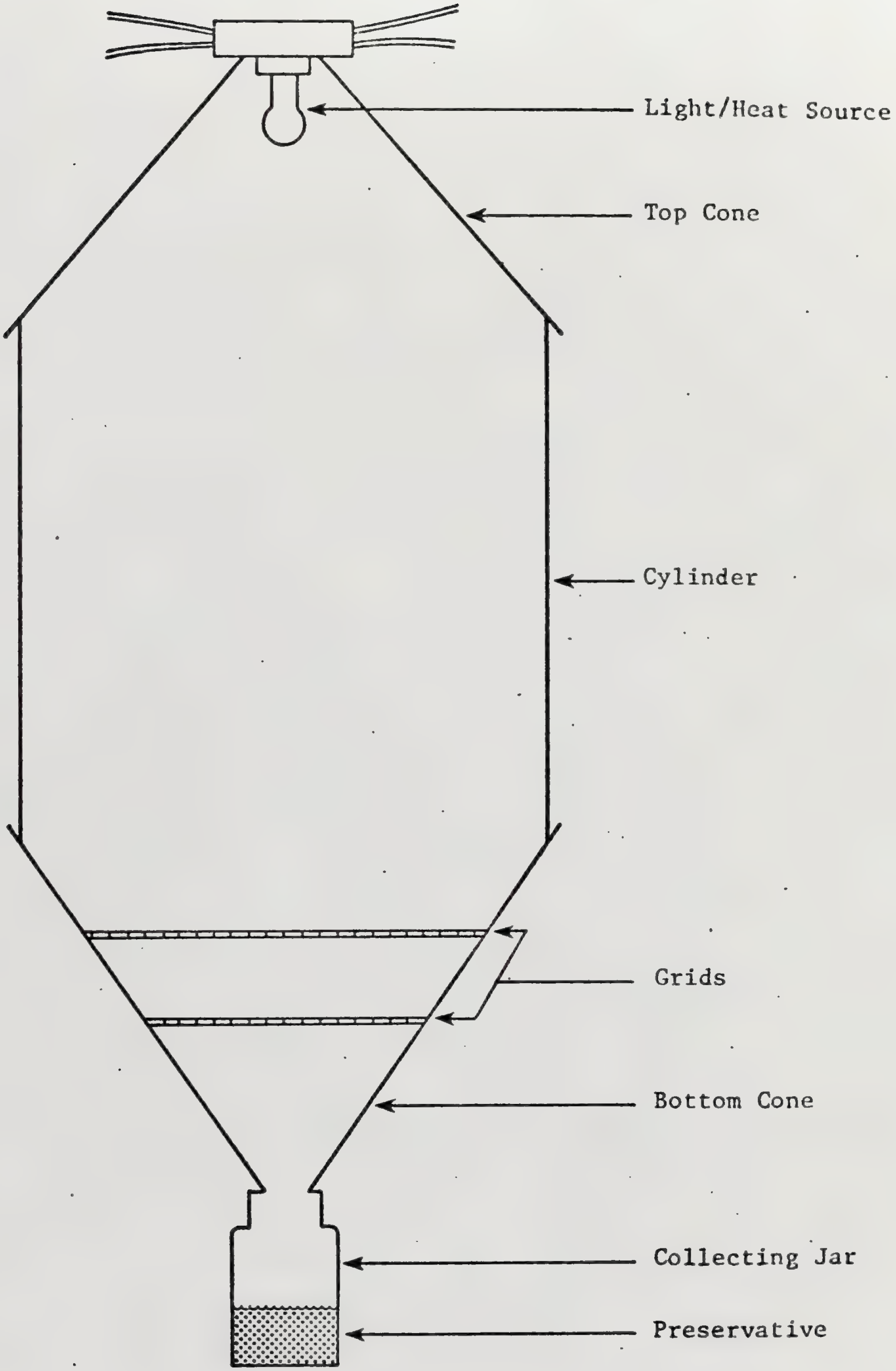
Light/Heat Source
Top Cone
Cylinder
Grids
Bottom Cone
Collecting Jar
Preservative

Figure 2.3-31. Berlese funnel used for RBOSP.

plant to be sampled. The trap prevents escape of the invertebrates. The vacuum is then used to remove the invertebrates by suction. After the area has been vacuumed thoroughly, with the trap in place, the trap is removed and the vacuuming repeated. The second vacuuming allows the operator to get down close to the plant, insuring a more complete removal of invertebrates and litter. During vacuuming, the plant is visualized as a sphere and the diameter estimated. The efficiency of removal by vacuuming is calibrated by clipping the plant and placing it in a plastic bag immediately after the second vacuuming. The plant is taken to the field station or laboratory for inspection of remaining invertebrates. Immediately following clipping, another brief vacuuming is made of the clipped area with this material also hand sorted. This calibration is done for one specimen of each plant species sampled at each site in May and September. Plants from each species designated for sampling are selected in the field primarily on the basis of a workable size for using the trap. During each sampling period, five trap samples are taken from one or more dominant shrubs at each sampling site as follows:

Site 1 - rabbitbrush (Chrysothamnus nauseosus)
Site 2 - shadscale (Atriplex confertifolia)
Site 3 - sagebrush (Artemesia tridentata)
Site 4 - sagebrush (Artemesia tridentata)
Site 5 - serviceberry (Amelanchier utahensis)
snowberry (Symphoricarpos oreophilus)

All samples are placed in Berlese funnels for separation on the same day they are taken. Calibration of Berlese and vacuuming efficiencies as previously described occurs during the first and last sampling period each year. Hand-picking of Berlese remains is done for one specimen of each plant species sampled at each site. In the laboratory, analyses reveal, through known life history data, which invertebrates were plant inhabitants and which were picked up from the soil and litter beneath the plant.

2.3.9.2.2 Laboratory Analysis of Samples

All samples taken in the field and transported to the laboratory for analysis are handled in the same way -- placed in a container of 70 percent alcohol and 3 percent glycerin, labeled, recorded in the field log book, transported to the laboratory and receipted upon arrival in the laboratory.

Analyses of data include number of insects per volume of shrub species per unit of area in each vegetation type sampled. Shrub volume data gathered during both the invertebrate and phytosociological studies are used to calculate the average volume of the dominant shrubs in each of the three vegetation types subjected to invertebrate sampling.

In addition to field samples, colored infrared imagery (1:6000 scale) is used to determine the extent of western harvester ant (Pogonomyrmex occidentalis) colonization on the tract and surrounding areas. Random squares of known area are inspected on the imagery maps, and the number of mounds falling within each square is counted to determine the number of mounds per unit area within the site vicinity.

Observation of plant damage by invertebrates also is noted in the field and a photographic record kept for identification and analysis.

2.3.9.3 Results

Invertebrate samples were taken utilizing seven different techniques (pitfalls, litter D-Vac, trap D-Vac for individual plant species, herbaceous sweeps, beating, aerial sweeps and malaise traps) in June, July, and September, 1975 at 5 sampling sites established in different vegetation types on or near Tract C-a. Analysis has been completed for the June data and is in progress on the July and September samples. Invertebrate sampling locations are the same as several used for small mammal sampling and are described in Table 2.3-32. Table 2.3-172 represents a list of the invertebrate groups collected and identified to date. Species groups deemed important numerically or because of their feeding habits will be sent to recognized experts for confirmation of species identification.

2.3.9.3.1 Density and Abundance

2.3.9.3.1.1 Pitfall Sampling

Population density estimates for ground dwelling invertebrates are presented in Tables 2.3-173 through 2.3-177. Calculations of density are dependent on a negative slope for capture rate plotted against total animals removed, i.e., to obtain this estimate, the capture rate must decrease over time during the sampling period. This criterion has not been met for many orders of invertebrates however, and in many cases the data trends show either large day to day population fluctuations, drastic declines in populations, or little population reduction over the 10-day trapping period. The overall net result may be a negative slope, however the slope is not gradual.

Only invertebrates which were limited behaviorly or morphologically to the pitfall grid area were used in calculation of density. Families known or suspected to fly or hop frequently during their daily activities were not included. Of the 11 orders captured which were used in the calculations, Thysanura, Collembola, Lepidoptera (larvae), Araneida, Phalangida, Acari, Scorpionida, Chelonethida, and Solpugida do not have wings. It was assumed that these groups are limited to the grid enclosure, although some have specialized means of transport which could allow them to emigrate.

Table 2.3-172 Invertebrate groups collected and identified to date for RBOSP

ORDER/Family

THYSANURA
- Machilidae

COLLEMBOLA
- Isotomidae
- Entomobryidae
- Sminthuridae

ORTHOPTERA
- Acrididae
- Gryllacrididae

PSOCOPTERA
- Trogiidae

THYSANOPTERA

HEMIPTERA
- Miridae
- Reduviidae
- Tingidae
- Arադididae
- Lygaeidae
- Pentatomidae

HOMOPTERA
- Cicadellidae
- Delphacidae
- Psyllidae
- Aphididae
- Coccoidea (superfamily)

COLEOPTERA
- Carabidae
- Histeridae
- Staphylinidae
- Scydmaenidae
- Cantharidae
- Lampyridae
- Dermestidae
- Ostomidae
- Cleridae
- Elateridae
- Erotylidae
- Lathridiidae

ORDER/Family

COLEOPTERA (Cont.)
- Coccinellidae
- Anthicidae
- Meloidae
- Tenebrionidae
- Melandryidae
- Ptinidae
- Anobiidae
- Scarabaeidae
- Byrrhidae
- Chrysomelidae
- Curculionidae
- Scolytidae

NEUROPTERA
- Hemerobiidae
- Myrmeleontidae

LEPIDOPTERA
- Hesperidae
- Arctiidae
- Noctuidae
- Geometridae
- Pyralidoidea (superfamily)
- Pterophoridae
- Tortricoidea (superfamily)

DIPTERA
- Tipulidae
- Psychodidae
- Chironomidae
- Simulidae
- Bibionidae
- Mycetophilidae
- Sciaridae
- Cecidomyiidae
- Therevidae
- Asilidae
- Empididae
- Dolichopodidae
- Phoridae
- Pipunculidae
- Syrphidae
- Otitidae
- Tephritidae

Table 2.3-172 (Continued)

ORDER/Family

DIPTERA (Cont.)
- Sepsidae
- Sciomyzidae
- Chamaemyiidae
- Lonchaeidae
- Chloropidae
- Heleomyzidae
- Trixosceldididae
- Agromyzidae
- Anthomyiidae
- Muscidae
- Calliphoridae
- Tachinidae

HYMENOPTERA
- Xyelidae
- Tenthredinidae
- Braconidae
- Ichneumonidae
- Mymaridae
- Eulophidae
- Encyrtidae
- Eupelmidae
- Pteromalidae
- Chalcididae
- Figitidae
- Cynipidae
- Proctotrupidae
- Diapriidae
- Scelionidae
- Platygasteridae
- Bethylidae
- Dryinidae
- Formicidae
- Vespidae
- Sphecidae
- Colletidae
- Andrenidae
- Halictidae
- Megachilidae
- Apidae

SCORPIONIDA

CHELONETHIDA

SOLPUGIDA

ORDER/Family

ARANEIDA
- Dictynidae
- Hahniidae
- Lycosidae
- Oxyopidae
- Gnaphosidae
- Thomisidae
- Salticidae

PHALANGIDA

ACARI

GEOPHILOMORPHA

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[1] Common names, correct spelling, and taxonomic order from: Borror, D.J. and DeLong, D.M. 1971. An Introduction to the study of Insects. Holt, Rinehart, and Winston. New York. 812 pp.

Table 2.3-173 Relative abundance and population density estimates* for ground dwelling invertebrates collected by pitfall traps at site 1, greasewood-sagebrush, during June, 1975 for RBOSP

taxon	# collected	relative abundance**	density (#/M2)
THYSANURA	17	7.30	1.35
COLLEMBOLA	14	6.01	0.12
COLEOPTERA	39	16.74	***
LEPIDOPTERA	15	6.44	0.22
HYMENOPTERA	46	19.74	***
ARANEIDA	28	12.02	0.80
PHALANGIDA	51	21.89	1.42
ACARI	23	9.87	0.22

* catch-effort regression method (Gist and Crossley, Jr.,1973)

** (# collected each taxon, site 1/# collected all taxa, site 1) X 100

*** assumptions of density estimation method not met

Table 2.3-174 Relative abundance and population density estimates* for ground dwelling invertebrates collected by pitfall traps at site 2, pinyon-juniper (south slope), during June, 1975 for RBOSP

taxon	# collected	relative abundance**	density (#/M2)
THYSANURA	7	0.41	0.25
COLLEMBOLA	1525	89.13	22.92
COLEOPTERA	14	0.82	0.18
LEPIDOPTERA	2	0.12	***
HYMENOPTERA	39	2.28	2.83
SCORPIONIDA	2	0.12	0.02
CHELONETHIDA	1	0.06	0.01
ARANEIDA	20	1.17	***
ACARI	101	5.90	***

* catch-effort regression method (Gist and Crossley, Jr., 1973)

** (# collected each taxon, site 2/# collected all taxa, site 2) X 100

*** assumptions of density estimation method not met

Table 2.3-175. Relative abundance and population density estimates* for ground dwelling invertebrates collected by pitfall traps at site 3, pinyon-juniper (north slope), during June, 1975 for RBOSP

taxon	# collected	relative abundance**	density (#/M2)
COLLEMBOLA	240	62.02	***
COLEOPTERA	59	15.25	***
LEPIDOPTERA	1	0.26	0.01
HYMENOPTERA	39	10.08	***
CHELONETHIDA	1	0.26	0.01
SOLPUGIDA	1	0.26	0.01
ARANEIDA	16	4.13	0.57
ACARI	30	7.75	***

* catch-effort regression method (Gist and Crossley, Jr., 1973)

** (# collected each taxon, site 3/# collected all taxa, site 3) X 100

*** assumptions of density estimation method not met

Table 2.3-176 Relative abundance and population density estimates* for ground dwelling invertebrates collected by pitfall traps at site 4, sagebrush, during June, 1975 for RBOSP

taxon	# collected	relative abundance**	density (#/M2)
COLLEMBOLA	4856	91.40	80.27
ORTHOPTERA	2	0.04	***
COLEOPTERA	23	0.43	0.31
LEPIDOPTERA	13	0.24	***
HYMENOPTERA	248	4.67	***
ARANEIDA	50	0.94	0.90
ACARI	121	2.28	***

* catch-effort regression method (Gist and Crossley, Jr.,1973)
** (# collected each taxon, site 4/# collected all taxa, site 4) X 100
*** assumptions of density estimation method not met

Table 2.3-177 Relative abundance and population density estimates* for ground dwelling invertebrates collected by pitfall traps at site 5, mixed brush, during June, 1975 for RBOSP

taxon	# collected	relative abundance**	density (#/M2)
THYSANURA	28	10.85	0.42
COLLEMBOLA	32	12.40	0.40
ORTHOPTERA	5	1.94	0.04
COLEOPTERA	29	11.24	***
LEPIDOPTERA	8	3.10	0.19
HYMENOPTERA	77	29.84	1.33
ARANEIDA	45	17.44	0.96
PHALANGIDA	13	5.04	0.65
ACARI	21	8.14	***

* catch-effort regression method (Gist and Crossley, Jr.,1973)

** (# collected each taxon, site 5/# collected all taxa, site 5) X 100

*** assumptions of density estimation method not met

In the orders Hymenoptera and Coleoptera, only certain families were included in the density calculations. In Hymenoptera, only wingless wasps and ants were included with ants presenting a particular problem in that visual observation indicated that most species can easily climb the barrier surrounding the grid, and move in and out of the pitfall traps at will. In Coleoptera, only families which tend to stay on the ground, such as Tenebrionidae and Carabidae, were used in the density calculations. Others such as Chrysomelidae and Curculionidae were left out because they spend at least some time airborne moving from plant to plant, to feed or when disturbed. Other orders such as Hemiptera and Homoptera were not included in the calculations.

At Site 1 (greasewood-sagebrush) the total density of ground dwellers was calculated at 4.13 invertebrates per m^2. Phalangida was the most abundant order (Table 2.3-173). In no order captured was there a satisfactory gradual decline in capture rate which would indicate that the density estimate is accurate. Because of a lack of a negative slope, density estimates of Coleoptera and Hymenoptera could not be calculated although they are the second and third most abundant orders captured.

Capture rates of the six orders for which densities were calculated showed little tendency to decrease over the 10-day period. This may be an indication that populations have not been affected enough by removals for capture rate to decrease.

At Site 2 (pinyon-juniper/south slope), the total density was estimated at 26.21 invertebrates per m^2 due largely to the density of Collembola (Table 2.3-174). The capture rate for this order peaked in the middle of the sampling period. Acari and Araneida, two of the more abundant orders captured exhibited positive slopes, indicating an increase in capture rate during the sampling period. Collembola showed the highest relative abundance of any group sampled at Site 2.

One-half of the orders captured at Site 3 (pinyon-juniper/north slope) exhibited a zero or positive slope and were not included in density calculations (Table 2.3-175). Trends in capture rates for Hymenoptera and Collembola show increases toward the latter part of the sampling period. Capture rates for Coleoptera, Acari, and Araneida fluctuated throughout the period. Three of the four orders for which estimated densities were obtained had only 1 individual captured. The total calculated invertebrate density at Site 3 was 0.60 individuals/m^2.

Major differences between Site 2 and Site 3 (the two pinyon-juniper sites) are a lessening of numerical dominance at Site 3 of Collembola and an increase in the number of Coleoptera taken at Site 3. Only about one-third the number of Acari was taken at Site 3 as compared to Site 2. Collembola are clearly dominant at Site 3.

The largest total number of invertebrates was removed from Site 4 (sagebrush) (Table 2.3-176). This is primarily due to the high capture rate of Collembola although large numbers of individuals of the orders Acari, Araneida, and Hymenoptera were also captured. A total of density estimates yield 81.48 invertebrates per m^2 for Site 4. As at other sites, trends in capture rate tend to fluctuate for some orders, particularly for Collembola where daily captures varied rather drastically on four separate occasions. Acari also exhibited strong fluctuations, while other orders remained relatively constant in their capture rates throughout the sample period. Relative abundance at Site 4 is dominated by Collembola.

At Site 5 (mixed brush) the total estimated density is 3.99 invertebrates per m^2 (Table 2.3-177). Trends in capture rate indicate no readily visible decreases in any order over the 10-day period. Seven orders of invertebrates showed a relative abundance greater than 5 percent. Ants (Hymenoptera) showed the greatest relative abundance (about 30 percent).

2.3.9.3.1.2 Litter D-Vac Sampling

Results are expressed as the number of invertebrates per kilogram of litter for five samples taken at each site (Tables 2.3-178 through 2.3-182) and the average number of invertebrates per kilogram of litter sample (Table 2.3-183). Numbers of species groups and numbers of individuals collected are shown in Table 2.3-184.

At Site 1 (greasewood-sagebrush), the number of invertebrates varied from 0 to 117.6 per kilogram of litter (Table 2.3-178) with an average of 38.0 invertebrates per kilogram of litter and a standard error of 20.5 (Table 2.3-183). Numerically, predominant groups at the greasewood-sagebrush site were dictynid spiders (Dictynidae) and ground beetles (Carabidae), which contributed just less than half of the total captures (Table 2.3-184). Capture rates for pitfall day 8, when litter samples were taken, show no readily visible differences from other days, an indication that the litter samples are probably representative for the time period. Only one sample from Site 2 (pinyon-juniper/south slope) showed greater than four invertebrates per kilogram of litter (Table 2.3-179) yielding

Table 2.3-178 Results of litter d-vac invertebrate sampling at site 1, greasewood-sagebrush, during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted #*	litter dry weight (gm)	# of invertebrates per kilogram litter
132	0	0.00	174.00	0.0
133	20	20.00	170.00	117.6
134	4	4.00	220.00	18.2
135	14	14.00	585.00	23.9
136	18	18.00	595.00	30.3

* # of invertebrates in sample X Berlese calibration factor

Table 2.3-179 Results of litter d-vac invertebrate sampling at site 2, pinyon-juniper (south slope), during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted* #	litter dry weight (gm)	# of invertebrates per kilogram litter
127	0	0.00	499.00	0.0
128	0	0.00	398.00	0.0
129	1	1.00	486.00	2.1
130	1	1.00	388.00	2.6
131	1	1.00	236.00	4.2

* # of invertebrates in sample X Berlese calibration factor

Table 2.3-180 Results of litter d-vac invertebrate sampling at site 3, pinyon-juniper (north slope), during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted #*	litter dry weight (gm)	# of invertebrates per kilogram litter
122	10	10.00	688.00	14.5
123	0	0.00	554.00	0.0
124	0	0.00	421.00	0.0
125	1	1.00	326.00	3.1
126	2	2.00	274.00	7.3

* # of invertebrates in sample X Berlese calibration factor

Table 2.3-181 Results of litter d-vac invertebrate sampling at site 4, sagebrush, during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted* #	litter dry weight (gm)	# of invertebrates per kilogram litter
87	45	45.00	131.00	343.5
88	11	11.00	215.00	51.2
89	128	128.00	173.00	739.9
90	177	177.00	124.00	1427.4
157	11	11.00	314.00	35.0

* # of invertebrates in sample X Berlese calibration factor

Table 2.3-182 Results of litter d-vac invertebrate sampling at site 5, mixed brush, during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted #*	litter dry weight (gm)	# of invertebrates per kilogram litter
76	42	42.00	342.00	122.8
77	11	11.00	423.00	26.0
80	9	9.00	254.00	35.4
155	77	77.00	292.00	263.7
156	60	60.00	322.00	186.3

* # of invertebrates in sample X Berlese calibration factor

Table 2.3-183 Average number of invertebrates collected from litter by the d-vac method at each sampling site during June, 1975 for RBOSP

site	vegetation type	# of samples	avg. # of inverts. per kilogram litter	variance	std. error
1	greasewood-sagebrush	5	38.0	2109.6	20.5
2	pinyon-juniper (south slope)	5	1.8	3.3	0.8
3	pinyon-juniper (north slope)	5	5.0	37.5	2.7
4	sagebrush	5	519.4	339477.0	260.6
5	mixed brush	5	126.9	10202.3	45.2

Table 2.3-184 Results of Litter D-vac sampling at each site during June, 1975 for RBOSP

ORDER Family	Common Name	Site 1 A1/	Site 1 B2/	Site 2 A	Site 2 B	Site 3 A	Site 3 B	Site 4 A	Site 4 B	Site 5 A	Site 5 B
THYSANURA											
Machilidae	jumping bristletails									1	1
COLLEMBOLA											
Isotomidae	elongate-bodied springtails							1	49		
Entomobryidae	elongate-bodied springtails							1	1	1	37
THYSANOPTERA	thrips	1	1							1	1
HEMIPTERA	true bugs	-	1					-	4	-	5
HOMOPTERA	hoppers	-	2			-	1	-	3	-	10
COLEOPTERA											
Carabidae	ground beetles	3	9					1	3	1	2
Carabidae-larvae	ground beetles	1	7			1	3				
Staphylinidae	rove beetles	2	2			1	1	1	1	1	1
Cleridae	checkered beetles							1	1	1	1
Anthicidae	antlike flower beetles	1	4								
Tenebrionidae	darkling beetles							1	1		
Melandryidae	false darkling beetles	1	1								
Chrysomelidae	leaf beetles	1	1								
Curculionidae	snout beetles	1	2			2	2			2	2
Unknown larvae		1	1			1	1			-	11
LEPIDOPTERA											
Hesperidae larvae	skippers							1	1		
Noctuidae larvae	armyworms & cutworms	-	2					-	2	1	1
Pyralidoidea larvae	plume moths, snout moths							1	1	1	1
Unknown larvae								1	1		

Table 2.3-184 (Continued)

ORDER Family	Common Name	Site 1 A1/	Site 1 B2/	Site 2 A	Site 2 B	Site 3 A	Site 3 B	Site 4 A	Site 4 B	Site 5 A	Site 5 B
DIPTERA											
Unknown larvae	flies					1	1			1	12
HYMENOPTERA											
Dryinidae (non-winged)	dryinid wasps							1	1		
Formicidae	ants	1	1	3	3	2	3	7	210	7	63
Formicidae (pupae)								1	64		
Unknown (winged)		-	8					1	1	1	1
CHELONETHIDA	pseudoscorpions									1	14
ARANEIDA											
Dictynidae	dictynid spiders	-	10					-	2	-	8
Gnaphosidae	hunting spiders	-	3								
Thomisidae	crab spiders							-	3		
Salticidae	jumping spiders							-	2		
Unknown						1	1	1	1		
PHALANGIDA	harvestmen	1	1								
ACARI	ticks & mites							-	19	-	26
GEOPHILOMORPHA	centipedes							-	1	1	2
			56		3		13		372		199

1/ A = Number of species groups

2/ B = Total number of individuals

a low overall average of 1.8 invertebrates per kilogram for this site. Actual captures show only three ants taken in 5 samples (Table 2.3-184) an extremely low figure in view of the fact that duff layers where samples were taken were thick. A comparison of litter results and pitfall results for the day litter samples were taken show a low capture rate for Collembola in the pitfalls (down to 15 individuals from 876 and 184 the previous two days). If the springtails were not active at the ground level, as indicated by pitfall results, they may have moved out of the litter layer which would affect the litter results.

Results from Site 3 (pinyon-juniper/south slope) are similar to Site 2 in that small numbers of invertebrates per kilogram of litter were captured in all samples (Table 2.3-180) resulting in a calculated average for the Site of 5.0 invertebrates per kilogram of litter (Table 2.3-183). Of the specimens captured, no families were numerically dominant (Table 2.3-184). On pitfall day 7, when the litter samples were taken, Collembola was the most abundant group sampled, however, none were picked up in the litter. One possible explanation is that Collembola are active during some part of the day, but retreat during the heat of the day where they are not reachable by litter vacuuming.

Site 4 (sagebrush) had by far the most densely populated litter samples, ranging from 35.0 to 1427.4 invertebrates per kilogram of litter for the 5 samples taken (Table 2.3-181). This is an average of 519.4 invertebrates per kilogram of litter with a standard error of 260.6 (Table 2.3-183). The major factor in this increase in abundance over other sites is the presence of 96 individuals of Formicidae which succeeded in transporting 64 pupae as they migrated through the litter in the Berlese funnel (Table 2.3-184). The presence of pupae is a good indication that the sample was taken over an ant nest, which is probably also true for one other of the 5 samples in which 74 specimens of the same ant species were taken. All of the Collembola taken at the sagebrush site were found in one sample. The abundance of Collembola and Formicidae in the samples at Site 4 appears to be the most obvious difference between this site and site 1 (also predominantly sagebrush).

Results from Site 5 (mixed brush) show a range of 26.0 to 263.7 invertebrates per kilogram of litter (Table 2.3-182) with an average for the mixed brush site of 126.9 and a standard error of 45.2 (Table 2.3-183). Numerical dominants at Site 5 included the springtail family Entomobryidae ants (Formicidae) and mites (Acari).

2.3.9.3.1.3 Trap D-Vac Sampling

Samples taken using a trap and a vacuuming unit were designed to quantify invertebrates per cubic meter of space occupied by a known plant species. Five plant species were selected; one of these species was sampled at two sites. Five trap D-Vac samples were taken from each designated plant species at each sample site. Results are presented in Tables 2.3-185 through 2.3-192. Families used in the calculations were determined primarily by feeding habits. Those known to feed on live plant material in any form were included; the remaining families are scavengers (probably found in the litter beneath the plant), or predators or parasites which were "hunting" on the plant or in the litter below. One exception is the order Acari which was not included in the calculations at all because of problems in determining where they are found and their exact feeding habits, although it is suspected that at least some of those captured are herbivores found on the plant.

At Site 1 (greasewood-sagebrush) estimates ranged from 182.6 to 2101.3 invertebrates per cubic meter of plant sampled (rabbitbrush) (Table 2.3-185), yielding a calculated average of 844.6 invertebrates per cubic meter of rabbitbrush at Site 1 and a standard error of 341.7 (Table 2.3-191). An obvious source of variation in the samples taken from rabbitbrush is apparent when data from individual plant samples are examined. The bulk of thrips (Thysanoptera) and leafhoppers (Cicadellidae) were taken from 1 plant (the second smallest plant) substantially increasing the number of invertebrates per cubic meter for that plant. The remaining abundant family (Anthicidae) was evenly distributed on all 5 rabbitbrush plants sampled (Table 2.3-192).

Variation in the number of invertebrates per cubic meter of shadscale at Site 2 (pinyon-juniper/south slope) is substantial with a range of 67.3 to 611.2 the average for the 5 shadscale plants was 277.7 invertebrates per cubic meter with a standard error of 100.2 (Tables 2.3-186 and 2.3-191). The most visible source of variation appears to be a lack of any correlation between the number of invertebrates found on a plant and it's volume at Site 2 as opposed to Site 1 where concentration of a few species on one plant was a source of major difference in numbers between plants. Numerically dominant groups sampled by trap D-Vac at Site 2 include ants (Formicidae), mites (Acari), and a species group of Lepidoptera larvae in the super family Tortricoidea (Table 2.3-192).

Table 2.3-185 Results of trap d-vac invertebrate sampling from rabbitbrush (*Chrysothamnus nauseosus*), at site 1, greasewood-sagebrush, during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted #*	plant diameter(M)	plant volume(M3)	# of invertebrates per cubic meter
21	31	38.74	0.58	0.102160	379.2
22	23	28.74	0.46	0.050965	564.0
23	22	27.49	0.66	0.150533	182.6
24	15	18.74	0.33	0.018817	996.2
25	70	87.48	0.43	0.041630	2101.3

* # of invertebrates in sample X d-vac and Berlese calibration factors

Table 2.3-186 Results of trap d-vac invertebrate sampling from shadscale (*Atriplex confertifolia*), at site 2, pinyon-juniper (south slope), during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted #*	plant diameter(M)	plant volume(M3)	# of invertebrates per cubic meter
36	5	5.00	0.25	0.008181	611.2
37	9	9.00	0.36	0.024429	368.4
38	8	8.00	0.61	0.118847	67.3
39	6	6.00	0.51	0.069456	86.4
40	13	13.00	0.46	0.050965	255.1

* # of invertebrates in sample X d-vac and Berlese calibration factors

Table 2.3-187 Results of trap d-vac invertebrate sampling from sagebrush (*Artemisia tridentata*), at site 3, pinyon-juniper (north slope), during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted #*	plant diameter(M)	plant volume(M3)	# of invertebrates per cubic meter
49	2	4.00	0.51	0.069456	57.6
50	8	16.00	0.15	0.001767	9054.1
51	2	4.00	0.23	0.006371	627.9
52	2	4.00	0.23	0.006371	627.9
53	5	10.00	0.28	0.011494	870.0

* # of invertebrates in sample X d-vac and Berlese calibration factors

Table 2.3-188 Results of trap d-vac invertebrate sampling from sagebrush (*Artemisia tridentata*), at site 4, sagebrush, during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted #*	plant diameter(M)	plant volume(M3)	# of invertebrates per cubic meter
11	13	17.00	0.46	0.050965	333.6
12	7	9.15	0.43	0.041630	219.9
13	8	10.46	0.43	0.041630	251.3
14	5	6.54	0.53	0.077952	83.9
15	8	10.46	0.38	0.028731	364.1

* # of invertebrates in sample X d-vac and Berlese calibration factors

Table 2.3-189 Results of trap d-vac invertebrate sampling from serviceberry (*Amelanchier utahensis*), at site 5A, mixed brush, during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted #*	plant diameter(M)	plant volume(M3)	# of invertebrates per cubic meter
54	4	4.00	0.43	0.041630	96.1
55	4	4.00	0.51	0.069456	57.6
56	6	6.00	0.58	0.102160	58.7
57	5	5.00	0.20	0.004189	1193.7
58	4	4.00	0.15	0.001767	2263.5

* # of invertebrates in sample X d-vac and Berlese calibration factors

Table 2.3-190 Results of trap d-vac invertebrate sampling from snowberry (*Symphoricarpos oreophilus*), at site 5B, mixed brush, during June, 1975 for RBOSP

sample #	# of invertebrates in sample	adjusted #*	plant diameter(M)	plant volume(M3)	# of invertebrates per cubic meter
66	11	11.00	0.51	0.069456	158.4
67	2	2.00	0.15	0.001767	1131.8
68	9	9.00	0.23	0.006371	1412.7
69	5	5.00	0.23	0.006371	784.9
70	2	2.00	0.28	0.011494	174.0

* # of invertebrates in sample X d-vac and Berlese calibration factors

Table 2.3-191. Average number of invertebrates collected from selected plant species by the trap d-vac method at each sampling site during June, 1975 for RBOSP

site	vegetation type	plant species	# of samples	avg. # of inverts. per cubic meter	variance	std. error
1	greasewood-sagebrush	*Chrysothamnus nauseosus*	5	844.6	583940.2	341.7
2	pinyon-juniper (south slope)	*Atriplex confertifolia*	5	277.7	50199.2	100.2
3	pinyon-juniper (north slope)	*Artemisia tridentata*	5	2809.4	22761698.2	2133.6
4	sagebrush	*Artemisia tridentata*	5	235.8	10742.6	46.4
5A	mixed brush	*Amelanchier utahensis*	5	733.9	967806.4	440.0
5B	mixed brush	*Symphoricarpos oreophilus*	5	732.3	316603.4	251.6

Table 2.3-192 Results of Trap D-vac sampling of plant species at each site during June, 1975 for RBOSP

		Site 1 Chrysothamnus nauseosus		Site 2 Atriplex confertifolia		Site 3 Artemisia tridentata		Site 4 Artemisia tridentata		Site 5A Amelanchier utahensis		Site 5B Symphoricarpos oreophilus	
ORDER Family	Common Name	A1/	B2/	A	B	A	B	A	B	A	B	A	B
COLLEMBOLA													
Isotomidae	elongate-bodied springtails							1	11	1	4		
ORTHOPTERA													
Gryllacrididae	longhorned grasshoppers									1	1		
THYSANOPTERA 3/	thrips	3	50	1	3			2	3	1	1	1	4
HEMIPTERA													
Miridae nymph 3/	plant bugs			1	1			1	2				
Tingidae 3/	lace bugs							1	1			1	1
Tingidae nymph 3/	lace bugs	1	3										
Aradidae 3/	flat bugs									1	1		
Lygaeidae 3/	seed bugs							1	1	1	1	1	1
Unknown nymph 3/		-	3					-	5			-	2
HOMOPTERA													
Cicadellidae 3/	leafhoppers	3	3	1	4			2	3				
Cicadellidae nymph 3/	leafhoppers	2	30	3	4	1	1	2	2			2	5
Delphacidae 3/	delphacid planthoppers	1	10					3	6				
Psyllidae 3/	psyllids							1	1	1	1		
Aphididae 3/	aphids	1	6									1	1
Coccoidea (superfamily)3/	scale insects	1	5	1	8					1	2	1	1
Unknown nymphs 3/		-	4					1	1				
COLEOPTERA													
Carabidae	ground beetles	2	2					1	1	1	1		
Carabidae larvae	ground beetles					1	2						
Staphylinidae	rove beetles									1	1		
Scydmaenidae	antlike stone beetles									1	1		
Dermestidae	dermestid beetles			1	1								
Dermestidae larvae	dermestid beetles			1	1								
Ostomidae 3/	bark-gnawing beetles					1	1						
Cleridae 3/	checkered beetles									1	2		
Elateridae 3/	click beetles			1	2	2	2	1	1	1	1		
Elateridae larvae 3/	click beetles			1	1			1	1	1	2		

Table 2.3- 192 (Continued)

ORDER Family	Common Name	Site 1 *Chrysothamnus nauseosus*		Site 2 *Atriplex confertifolia*		Site 3 *Artemisia tridentata*		Site 4 *Artemisia tridentata*		Site 5A *Amelanchier utahensis*		Site 5B *Symphoricarpos oreophilus*	
		A 1/	B 2/	A	B	A	B	A	B	A	B	A	B
COLEOPTERA (Cont.)													
Erotylidae	pleasing fungus beetles									1	1		
Lathridiidae	minute brown scavenger beetles	1	6										
Coccinellidae	ladybird beetles							2	6	1	1		
Anthicidae 3/	antlike flower beetles	1	35										
Meloidae 3/	blister beetles											1	1
Tenebrionidae	darkling beetles							1	2	1	1		
Anobiidae 3/	anobiid beetles					1	1						
Scarabaeidae 3/	scarab beetles							1	1				
Chrysomelidae 3/	leaf beetles	1	1					1	1				
Curculionidae 3/	snout beetles	2	16	1	2	1	10	1	2	1	6	4	8
Unknown adults		1	1										
Unknown larvae		-	2	-	3	1	1			-	3	-	1
NEUROPTERA													
Myrmeliontidae larvae	antlions					1	1						
LEPIDOPTERA													
Arctiidae larvae 3/	tiger moths	1	1										
Noctuidae 3/	armyworms, cutworms											1	1
Noctuidae larvae 3/	armyworms, cutworms					1	1	-	6	-	5	-	2
Geometridae 3/	geometer moths									1	1		
Superfamily Pyralidoidea larvae 3/								-	2				
Pterophoridae larvae 3/	plume moths					1	1						
Superfamily Tortricoidea larvae 3/				-	15	-	2						
Unknown larvae 3/		1	1	1	1	1	1	-	6				
DIPTERA													
Chironomidae 3/	non-biting midges					1	1						
Cecidomyiidae 3/	gall midges					1	1					1	2
Therevidae larvae	stiletto flies					1	1			1	1	1	4
Phoridae	humpbacked flies	1	2										

Table 2.3- 192 (Continued)

ORDER Family	Common Name	Site 1 Chrysothamnus nauseosus A[1]	Site 1 B[2]	Site 2 Atriplex confertifolia A	Site 2 B	Site 3 Artemisia tridentata A	Site 3 B	Site 4 Artemisia tridentata A	Site 4 B	Site 5A Amelanchier utahensis A	Site 5A B	Site 5B Symphoricarpos oreophilus A	Site 5B B
HYMENOPTERA													
Braconidae	braconid wasps	1	1	1	1							2	2
Ichneumonidae	ichneumonid wasps							1	1				
Eulophidae	eulophid wasps	2	2	1	1								
Pteromalidae	pteromalid wasps	1	1									1	1
Ceraphronidae	ceraphronid wasps											1	1
Diapriidae	diapriid wasps	2	2	1	1			1	1				
Platygasteridae	platygasterid wasps	3	6										
Dryinidae	dryinid wasps							1	1				
Formicidae	ants	8	43	3	12	4	28	6	180	9	91	6	128
Unknown		1	1										
CHELONETHIDA	pseudoscorpions			1	2	1	4			1	4		
ARANEIDA													
Dictynidae	dictynid spiders	-	5	-	5	-	4	-	5			-	2
Hahniidae	hahniid spiders	-	2							1	1		
Lycosidae	wolf spiders	1	1			1	1			-	2		
Oxyopidae	lynx spiders					1	1						
Gnaphosidae	gnaphosid spiders	-	3	1	1	-	3	-	4	-	2	-	2
Thomisidae	crab spiders	1	1					-	3	1	1	-	3
Salticidae	jumping spider	1	1	-	3			-	5	-	5		
Unknown spiderlings								-	4				
PHALANGIDA	harvestmen	1	1										
ACARI	mites	-	50	-	31	-	12	-	37	-	73	-	37
			301		103		80		306		217		210

[1] A = Number of species groups

[2] B = Total number of individuals

[3] Indicates families used in calculation of invertebrates per cubic meter of vegetation

At Site 3 (pinyon-juniper/north slope) five samples were taken from sagebrush (Artemisia tridentata) which contained an average of 2809.4 invertebrates per cubic meter and a standard error of 2133.6 (Table 2.3-191). The large standard error is attributed to the fact that two of the five plants sampled were extremes in terms of invertebrate numbers per cubic meter. The plant with the smallest volume had the largest number of invertebrates captured (8) while the largest plant had the smallest number of invertebrates (2). Although these figures do not appear to be drastically different, the type of calculation used extremely modifies the final totals. Only 2 species used in the calculations were found in numbers greater than 1, with the snout beetles (Curculionidae) clearly the most abundant (Table 2.3-192).

Results from Site 4 (sagebrush) show the least amount of variation in number of invertebrates per cubic meter of all plants sampled. The average number of invertebrates per cubic meter is 235.8 with a standard error of 46.4 (Tables 2.3-188 and 2.3-191). No families used in the calculations are dominant-numerically, and the distribution by family among the 5 plants sampled is relatively even throughout.

At Site 5 (mixed brush), two plant species were sampled, Amelanchier utahensis (Site 5A), and Symphoricarpos oreophilus (site 5B); five plants of each species were vacuumed. Results of sampling serviceberry (A. utahensis) gave an average of 733.9 invertebrates per cubic meter with a standard error of 440.0 (Table 2.3-191). Results for the 5 plants sampled indicate a relatively constant number of invertebrates from each plant, but a variation in the size of the plants (Table 2.3-189). The most abundant groups captured are snout beetles (Curculionidae) and scale insects in the super family Coccoidea (Table 2.3-191).

Snowberry (S. oreophilus) samples yielded an average of 732.3 invertebrates per cubic meter with a standard error of 251.6 (Table 2.3-191). Results in Table 2.3-190 show that the largest plant had the most invertebrates, yet the number of invertebrates per cubic meter was lowest. In contrast, the smallest plant also had the smallest number of invertebrates, but had the second largest number of invertebrates per cubic meter. Dominant groups numerically are thrips (Thysanoptera) and leafhoppers (Cicadellidae) (Table 2.3-192).

2.3.9.3.1.2 Herbaceous Sweep Sampling

Results from sweeping of the ground cover at each site are presented in Table 2.3-193. This sweep method is designed to determine qualitatively if there are any invertebrate groups not picked up in individual plant sampling which may be of importance in the vegetation types sampled. In addition, this method aids in formulating relative quantitative comparisons between sampling sites.

At Site 1 (greasewood-sagebrush), 127 specimens were captured in 100 sweeps (Table 2.3-193). Of this total, over one-half of the invertebrates fall into three groups: thrips (Thysanoptera), leafhoppers (Cicadellidae), and ants (Formicidae). Site 1 is the only site where thrips and Collembola were collected and the only site where leafhoppers were found in large numbers (nearly one-fourth of the total invertebrate numbers).

At Site 2 (pinyon-juniper/south slope), 48 invertebrates were captured, about one-fifth of which were one family of plant bug (Miridae). Other families of importance are Psyllidae, Eulophidae, and Formicidae, all of which contributed 15 percent or more to the total number.

Site 3 (pinyon-juniper/north slope) has very little ground cover, and this condition probably resulted in the low total number of invertebrates found in 100 sweeps (Table 2.3-193). Ants (Formicidae) are dominant numerically comprising greater than one-fourth the total. Delphacid planthoppers (Delphacidae) were also numerous.

Although the herbaceous stratum sampled by sweeping at ite 4 (sagebrush) visually appeared adequate to support a good insect population, the lowest total of invertebrates per 100 sweeps was found here. Ants (Formicidae) were the only group sampled which yielded more than 3 individuals.

Fifty invertebrates were captured at Site 5 (mixed brush) (Table 2.3-193). Of these, about one-sixth fall into three families: plant bugs (Miridae), leaf-miner flies (Agromyzidae) and ants (Formicidae).

Only three invertebrate families were taken at all sample sites; leafhoppers (Cicadellidae), pteromalid wasps (Pteromalidae) and ants (Formicidae). Ants were numerous in samples from all sites.

Table 2.3- 193 Results of ground layer herbaceous sweep sampling at each site during June, 1975 for RBOSP

ORDER Family	Common Name	Site 1		Site 2		Site 3		Site 4		Site 5	
		A1/	B2/	A	B	A	B	A	B	A	B
COLLEMBOLA											
Sminthuridae	globular springtails	1	3								
ORTHOPTERA											
Acrididae	short horned grasshoppers	1	1			1	1				
THYSANOPTERA	thrips	4	28								
HEMIPTERA											
Miridae	plant bugs	2	4	1	9	1	2			1	8
Lygaeidae	seed bugs	1	1								
Unknown immatures				-	2			-	1		
HOMOPTERA											
Cicadellidae	leafhoppers	4	29	1	2	2	3	1	1	2	4
Cicadellidae Imm.	leafhoppers			-	2	-	2				
Delphacidae	delphacid planthoppers	1	1			1	5			1	1
Psyllidae	psyllids			3	6			1	1	1	3
Aphididae	aphids	1	2	1	2						
COLEOPTERA											
Scydmaenidae	antlike stone beetles			1	1						
Cantharidae	soldier beetles					1	1	1	1		
Cleridae	checkered beetles									1	5
Erotylidae	pleasing fungus beetles	1	1							1	1
Lathridiidae	minute brown scavenger beetles	1	1								
Coccinellidae	ladybird beetles			1	1						
Anthicidae	antlike flower beetles	1	8								
Ptinidae	spider beetles			1	2						
Chrysomelidae	leaf beetles	1	2			1	1				
Curculionidae	snout beetles	1	1							3	3
Unknown larvae										-	1

Table 2.3-193 (Continued)

ORDER Family	Common Name	Site 1		Site 2		Site 3		Site 4		Site 5	
		A[1]	B[2]	A	B	A	B	A	B	A	B
LEPIDOPTERA											
Arctiidae larvae	tiger moths									1	1
Geometridae larvae	geometer moths									1	1
DIPTERA											
Empididae	dance flies					1	1				
Pipunculidae	big-headed flies	1	3								
Tephritidae	fruit flies									1	1
Chamaemyiidae	aphid flies			1	2						
Chloropidae	chloropid flies	1	1			1	1	1	3		
Agromyzidae	leaf-miner flies									1	7
Anthomyiidae	anthomyiid flies	1	1								
HYMENOPTERA											
Braconidae	braconid wasps	4	8			1	1			3	3
Ichneumonidae	ichneumonid wasps							1	1		
Mymaridae	fairyflies	1	1								
Eulophidae	eulophid wasps	1	2	3	9			1	2		
Encyrtidae	encyrtid wasps	1	1			1	1	1	1	1	1
Pteromalidae	pteromalid wasps	1	2	2	2	2	2	2	3	1	1
Scelionidae	scelionid wasps	1	1								
Formicidae	ants	4	17	3	7	2	8	3	6	5	8
Colletidae	yellow-faced bees									1	1
ARANEIDA											
Thomisidae	crab spiders	1	4					1	2		
Salticidae	jumping spiders			1	1						
ACARI	ticks & mites	1	4								
			127		48		29		22		50

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[1] A = Number of species groups

[2] B = Total number of individuals

2.3.9.3.1.5 Beating Samples

Beating samples were taken from big sagebrush (Artemisia tridentata) at Site 1, and pinyon (Pinus edulis) and juniper (Juniperus osteosperma) at Sites 2 and 3. Results are presented in Table 2.3-194.

Site 1 (greasewood-sagebrush) beating samples yielded 48 invertebrates of which one-third were in the order Homoptera. The remaining group which contributed a large number of individuals is the order of mites (Acari).

At Site 2 (pinyon-juniper/south slope), samples from pinyon contained 32 invertebrates, half of which are ants. Thirteen of the 16 ants were Tapinoma sessile, making this the most abundant species captured at this site. Juniper samples yielded 122 invertebrates, 105 of which were plant bugs (Miridae).

Site 3 (pinyon-juniper/north slope) pinyon samples yielded only 12 invertebrates of which one-half were spiders (Araneida). Two families were captured from pinyon at both Sites 2 and 3; orb-weaver spiders (Araneidae) and crab spiders (Thomisidae). Seventeen invertebrates were taken from Juniper at Site 3, 4 of which are the same species of plant bug (Miridae) found in abundance on Juniper at Site 2. In addition, the spider families Dictynidae, Thomisidae, and Salticidae, and mites (order Acari) were also found on juniper at both Sites 2 and 3.

2.3.9.3.1.6 Aerial Sweep-Sampling

Aerial sweeps were taken from the same species at the same sites as beating samples. The results are presented in Table 2.3-195. At Site 1 (greasewood-sagebrush), 100 invertebrates were collected, over half of which were a species of plant bug (Miridae) also found in beating samples from greasewood-sagebrush. The Homptera families which were abundant in the beating samples were not taken in aerial sweeps. In all, only thrips (order Thysanoptera), plant bugs (Miridae), ladybird beetles (Coccinellidae) and jumping spiders (Salticidae) were common to both sampling techniques.

Results from pinyon sweeps at Site 2 (pinyon-juniper/south slope) contained only 7 invertebrates. Three families (Coccinellidae, Curculionidae, and Araneidae) were found in both aerial sweeps and beating from pinyon at Site 2.

Table 2.3-194 Results of beating samples from plant species at sites 1, 2, and 3 during June, 1975 for RBOSP

		Site 1 Greasewood-sage		Site 2 Pinyon		SOUTH Juniper		Site 3 Pinyon		NORTH Juniper	
ORDER Family	Common Name	A1/	B2/	A	B	A	B	A	B	A	B
ORTHOPTERA											
Acrididae	short-horned grasshoppers	1	1								
THYSANOPTERA	thrips	2	2								
HEMIPTERA											
Miridae	plant bugs	1	5			1	105			1	4
Reduviidae	assassin bug							1	3		
Unknown		-	1					-	2		
HOMOPTERA											
Cicadellidae immature	leafhoppers	2	8								
Aphididae	aphids	1	6	1	3						
Coccoidea (superfamily)	scale insects							1	1		
COLEOPTERA											
Coccinellidae	ladybird beetles	1	1	1	1					1	1
Anthicidae	antlike flower beetles	1	2			1	2				
Meloidae	blister beetles					1	1				
Chrysomelidae	leaf beetles									1	2
Curculionidae	snout beetles	2	2							1	3
Scolytidae	bark beetles			1	2						
Unknown		1	1			-	2				
LEPIDOPTERA	butterflies and moths	1	2			1	2				
HYMENOPTERA											
Ichneumonidae	ichneumonid wasps									1	1
Eulophidae	eulophid wasps	1	1								
Figitidae	figitid wasps	1	1								
Platygasteridae	platygasterid wasps	1	1								
Formicidae	ants	2	4	2	16						

Table 2.3- 194 (Continued)

ORDER Family	Common Name	Site 1 Greasewood-sage A1/	Site 1 Greasewood-sage B2/	Site 2 Pinyon A	Site 2 Pinyon B	SOUTH Juniper A	SOUTH Juniper B	Site 3 Pinyon A	Site 3 Pinyon B	NORTH Juniper A	NORTH Juniper B
ARANEIDA											
Dictynidae	dictynid spiders					-	3		1	-	2
Araneidae	orb-weaver spiders			-	2	-	1		1		
Oxyopidae	lynx spiders					-	2				
Thomisidae	crab spiders				1	1	1		3	1	1
Salticidae	jumping spiders		2	1	1	1	1			-	2
ACARI		-	8	-	6	-	2	1	1	1	1
	TOTALS		48		32		122		12		17

1/A = Number of species groups

2/B = Total number of individuals

Table 2.3- 195 Results of aerial sweep samples from plant species at sites 1, 2, and 3 during June, 1975 for RBOSP

ORDER Family	Common Name	Site 1 Sagebrush		Site 2 Pinyon		SOUTH Juniper		Site 3 Pinyon		NORTH Juniper	
		A[1]	B[2]	A	B	A	B	A	B	A	B
COLLEMBOLA											
Sminthuridae	globular springtails					1	5				
THYSANOPTERA	thrips	2	17								
HEMIPTERA											
Miridae immature	plant bugs	1	55	1	1					1	12
Miridae nymph	plant bugs					1	74				
Unknown immature		-	3								
HOMOPTERA											
Psyllidae	psyllids	1	2								
COLEOPTERA											
Coccinellidae	ladybird beetles	1	3	1	1						
Meloidae	blister beetles			1	1						
Chrysomelidae	leaf beetles	1	1								
Curculionidae	Snout beetles			1	1						
LEPIDOPTERA						1	1				
DIPTERA											
Chironomidae	midges	1	1								
Asilidae	robber flies					1	1				
Tephritidae	fruit flies									1	1
Agromyzidae	leaf-miner flies	2	4			1	1				
Anthomyiidae	anthomyiid flies			1	1						
HYMENOPTERA											
Braconidae	braconid wasps	2	5	1	1						
Ichneumonidae	ichneumonid wasps	1	1								

Table 2.3- 195 (Continued)

ORDER Family	Common Name	Site 1 Sagebrush A[1]	Site 1 Sagebrush B[2]	Site 2 Pinyon A	Site 2 Pinyon B	SOUTH Juniper A	SOUTH Juniper B	Site 3 Pinyon A	Site 3 Pinyon B	NORTH Juniper A	NORTH Juniper B
HYMENOPTERA (Cont.)											
Eulophidae	eulophid wasps					2	2				
Pteromalidae	pteromalid wasps	3	3								
Formicidae	ants					1	1	1	3		
ARANEIDA											
Araneidae	orb-weaver spiders			1	1					1	1
Thomisidae	crab spiders	-	2					1	1	-	2
Salticidae	jumping spiders	-	3					1	1	-	3
Unknown										1	1
	TOTALS		100		7		85		5		20

[1] A = Number of species groups

[2] B = Total number of individuals

Sweeps from juniper at Site 2 yielded 85 invertebrates. As in the beating samples from juniper at this site, most of this total consists of a species of plant bug (Miridae).

Site 3 (pinyon-juniper/north slope) aerial sweep results reveal five invertebrates taken from pinyon, of which 3 were ants. This is consistant with beating samples from pinyon at Site 3 which also yielded a low total number of invertebrates.

Juniper trees yielded a total of 20 invertebrates in the two trees sampled. Of these 20, 12 are a species of plant bug (Miridae) also found in beating samples from juniper at both Sites 2 and 3.

2.3.9.3.1.7 Malaise Trap Sampling

Malaise traps left open for the 10-day sampling period yielded large numbers of invertebrates. As a result of this abundance in samples, subsampling was undertaken, and the results are presented in Table 2.3-196. The adjusted total on the last page of the table represents the actual total divided by the fraction of the whole sample used in determining the actual total.

Results from Site 1 (greasewood-sagebrush) yielded 3,254 invertebrates which when expanded for the entire sample gives a total estimate of 5,206 invertebrates. Flies (Diptera) and ants, bees, and wasps (Hymenoptera) were clearly the numerically dominant orders in the samples. The largest families in the order Diptera were midges (Chironomidae), anthomyiid flies (Anthomyiidae), gall midges (Cecidomyiidae), syrphid flies (Syrphidae), trixoscelidid flies (Trixoscelididae), and big-headed flies (Pipunculidae); all families were represented with over 100 individuals in the samples. About 30 percent of all invertebrates taken by Malaise trap were Chironomidae, and close to 13 percent were Anthomyiidae. Diptera also had the largest number of families (23). In Hymenoptera, 16 families were taken with Ichneumonidae, Braconidae, and Halictidae the most abundant families.

At Site 2 (pinyon-juniper/south slope), 1,077 invertebrates were taken in subsamples, yielding an estimated total of 2,872 invertebrates. The dominant order in abundance was again Diptera; Lepidoptera and Hymenoptera were also abundant in the Malaise samples. The largest families were anthomyiid flies (Anthomyiidae), dark-winged fungus gnats (Sciaridae), midges (Chironomidae), aphid flies (Chamaemyiidae), and gall-midges (Cecidomyiidae); these families range from 7 percent to 13 percent of the total invertebrate samples. In addition, 147 adult moths (Lepidoptera) were taken, the largest number at any site.

Table 2.3-196 Results of Malaise trap sampling at each site during June, 1975 for RBOSP

ORDER Family	Common Name	Site 1		Site 2		Site 3		Site 4		Site 5	
		A1/	B2/	A	B	A	B	A	B	A	B
PSOCOPTERA											
Trogiidae	booklice	1	4								
HEMIPTERA											
Miridae	plant bugs	1	31			1	8	1	4		
Lygaeidae	seed bugs	1	5								
Pentatomidae	stink bugs	1	1								
Unknown nymphs				-	4						
HOMOPTERA											
Membracidae	treehoppers	1	1								
Cicadellidae	leafhoppers	5	30	2	20	2	8	4	16	1	4
Delphacidae	delphacid planthoppers	1	1					1	4		
Psyllidae	psyllids	2	11	2	20			1	12	2	12
Aphidae	aphids	1	3								
COLEOPTERA											
Staphylinidae	rove beetles	2	5								
Scydmaenidae	antlike stone beetles			1	8						
Cantharidae	soldier beetles			1	4			1	4		
Lampyridae	fireflies	1	1								
Ostomidae	bark-gnawing beetles			1	4						
Cleridae	checkered beetles	1	1	1	4	1	12	1	8	1	4
Elateridae	click beetles									1	4
Lathridiidae	minute brown scavenger beetles	1	1								
Coccinellidae	ladybird beetles	2	31	1	4			1	4		
Anthicidae	antlike flower beetles	1	22								
Tenebrionidae	darkling beetles	1	2								
Chrysomelidae	leaf beetles			3	12	1	4	1	4		
Curculionidae	snout beetles	2	25								
NEUROPTERA											
Hemerobiidae	brown lacerwings	1	1	1	4						

Table 2.3- 196 (Continued)

ORDER Family	Common Name	Site 1		Site 2		Site 3		Site 4		Site 5	
		A1/	B2/	A	B	A	B	A	B	A	B
LEPIDOPTERA											
Hesperidae	skippers	1	1								
Unknown adults		–	53	–	147		32	–	80	–	28
DIPTERA											
Tipulidae	crane flies	1	1								
Psychodidae	moth flies	1	12								
Chironomidae	midges	3	984	2	93	2	64	2	140	2	160
Simuliidae	black flies	1	9	1	4					1	4
Bibionidae	march flies	2	28								
Mycetophilidae	fungus gnats	1	5	1	24	1	36				
Sciaridae	dark-winged fungus gnats	1	63	4	133	1	36	2	116	1	28
Cecidomyiidae	gall midges	3	274	1	76	1	36	1	92	1	32
Therevidae	stiletto flies	1	13	2	12	1	60			1	4
Asilidae	robber flies	2	12	2	5	1	8				
Dolichopodidae	long-legged flies	1	1								
Phoridae	humpbacked flies	1	45	1	16	1	8			1	12
Pipunculidae	big-headed flies	1	116	1	16						
Syrphidae	syrphid flies	3	195	3	24			1	28	2	8
Otitidae	picture-winged flies	1	1								
Tephritidae	fruit flies	1	4								
Sepsidae	black scavenger flies	1	4								
Sciomyzidae	marsh flies			1	1						
Lauxaniidae	lauxaniid flies										
Chamaemyiidae	aphid flies	1	121	1	84						
Lonchaeidae	lonchaeid flies					1	16			1	32
Chloropidae	chloropid flies	4	22			1	4				
Holeomyzidae	helomyzid flies			1	2						
Trixoscelididae	trixoscelidid flies	1	122	1	16	1	12			1	8
Anthomyiidae	anthomyiid	5	421	4	145					2	8
Muscidae	house flies	1	12								
Calliphoridae	blow flies	1	83							1	4
Tachinidae	tachinid flies	3	31	5	32			1	20		

Table 2.3- 196 (Continued)

ORDER Family	Common Name	Site 1 A[1/]	Site 1 B [2/]	Site 2 A	Site 2 B	Site 3 A	Site 3 B	Site 4 A	Site 4 B	Site 5 A	Site 5 B
HYMENOPTERA											
Xyelidae	xyelid sawflies									1	4
Tenthredinidae	common sawflies			1	4						
Braconidae	braconid wasps	7	74	5	20	3	24	1	4	4	20
Ichneumonidae	ichneumonid wasps	11	209	6	34	2	12	6	32	3	20
Mymaridae	fairyflies			1	8						
Eulophidae	eulophid wasps	3	5	4	26	2	8	1	4		
Encyrtidae	encyrtid wasps	2	5								
Pteromalidae	pteromalid wasps	3	34	4	18	2	8	1	4	1	4
Chalcididae	chalcidid wasps	1	1	1	1						
Cynipidae	gall wasps	1	26								
Proctotrupidae	proctotrupid wasps	1	4								
Diapriidae	diapriid wasps	1	4								
Platygasteridae	platygasterid wasps	1	6								
Bethylidae	bethylid wasps									1	4
Formicidae	ants			1	4						
Vespidae	paper wasps	2	9								
Sphecidae	sphecid wasps	1	1								
Colletidae	yellow-faced bees	2	2								
Andrenidae	andrenid bees	1	1	2	5	4	28	1	4	1	4
Halictidae	halictid bees	4	65	2	34	2	8	2	8		
Apidae	bumble bees, honey bees	2	2	1	9	5	36	1	4		—
	ACTUAL TOTAL		3254		1077		468		592		408
	ADJUSTED TOTAL		5206		2872		7488		4736		6528

[1/] A = Number of species groups

[2/] B = Total number of Individuals

Of the 468 invertebrates taken at site 3 (pinyon-juniper/north slope), Diptera (280) and Hymenoptera (124) made up over 86 percent of the total. Large dipteran families included Chironomidae, Sciaridae, and Cecidomyiidae. In addition, the fungus gnats (Mycetophilidae) and stiletto flies (Therevidae) were found in moderate numbers at this site only. Of the hymenopteran families taken, bumblebees (Apidae), andrenid bees (Andrenidae) and braconid wasps (Braconidae) were taken in abundance.

At Site 4 (sagebrush), 67 percent of all invertebrates sampled were flies. Most of this percentage (59 percent) was comprised three families: Chironomidae, Sciaridae, and Cecidomyiidae. In the order Hymenoptera, the only family taken in abundance was Ichneumonidae. At this site, as at Site 2, large numbers of adult moths (Lepidoptera) were captured.

Site 5 (mixed brush) results yielded 408 invertebrates in a 1/16 subsample, 160 of which were midges (Chironomidae). Three other dipteran families (including lonchaeid flies, Lonchaeidae) were moderately abundant at this site. This is the first site at which this family was taken in abundance.

2.3.9.3.2 Feeding Habits

All invertebrate families captured have been categorized into feeding types (Table 2.3-197). Within each order there are many families for which food type and feeding type are well-known and these feeding type categories usually apply to all members of the family. For others, however, nothing is known about feeding, or food habits are diverse within the family. In the latter, case, the most prevalent feeding type was used for calculation purposes, and in the former, the family was included as an unknown. There are two exceptions to these criteria: ants (Formicidae) are extremely varied in their food selection, and many vary their diet seasonally or as a response to availability, therefore, members of the family Formicidae are considered omnivorous. In the case of mites (Acari), little taxonomic work was done beyond the order level, so they were considered unknowns.

For purposes of assigning feeding habits to each family, the following classification system was developed.

(1) Plant sap feeder (Psf) - feeds on all plant juices except nectar.

(2) Plant tissue feeder (Ptf) - feeds on all plant parts except pollen.

Table 2.3-197 Feeding types for immatures and adults of all invertebrates collected at each sample site during June, 1975 for RBOSP

ORDER Family 1/	FOOD HABIT CLASSIFICATION Immature	 Adult
THYSANURA		
Machilidae		
COLLEMBOLA		
Isotomidae	S, Myp	S, Myp
Entomobryidae	S, Myp	S, Myp
Sminthuridae	Ptf, Myp	Ptf, Myp
ORTHOPTERA		
Acrididae	Ptf, Epr	Ptf, Epr
Gryllacrididae	Ptf, Epr, S	Ptf, Epr, S
PSOCOPTERA		
Trogiidae	Myp	Myp
THYSANOPTERA	Ptf	Ptf
HEMIPTERA		
Miridae	Psf, Epr	Psf, Epr
Reduviidae	Epr, Mp	Epr, Mp
Tingidae	Psf	Psf
Aradidae	Myp, Psf	Myp, Psf
Lygaeidae	Sf, Psf, Epr	Sf, Psf, Epr
Pentatomidae	Psf, Epr	Psf, Epr
HOMOPTERA		
Membracidae	Psf	Psf
Cicadellidae	Psf	Psf
Delphacidae	Psf	Psf
Psyllidae	Psf	Psf
Aphididae	Psf	Psf
Coccoidea (superfamily)	Psf	Psf
COLEOPTERA		
Carabidae	Epr	Epr,Ptf
Histeridae	Epr	Epr
Staphylinidae	Epr, S, Epa	Epr, S
Scydmaenidae	S	S
Cantharidae	Epr	Pf, Nf
Lampyridae	Epr	Epr
Dermestidae	S, Ptf	S, Ptf
Ostomidae	Ptf	Ptf
Cleridae	Epr	Epr
Elateridae	Ptf, Sf	Ptf
Erotylidae	Myp	Myp

Table 2.3-197 (Continued)

ORDER Family 1/	FOOD HABIT CLASSIFICATION Immature	 Adult
COLEOPTERA (Cont.)		
Lathridiidae	Myp	Myp
Coccinellidae	Epr, Ptf	Epr, Ptf
Anthicidae	2/	2/
Meloidae	Epr	Ptf
Tenebrionidae	S, Myp, Ptf	S, Myp, Ptf
Melandryidae	Ptf, Myp	Ptf, Myp
Ptinidae	2/	2/
Anobiidae	Ptf, Myp	Ptf, Myp
Scarabaeidae	S, Myp, Ptf	S, Myp, Ptf, Pf, Nf
Byrrhidae	Ptf	Ptf
Chrysomelidae	Ptf	Ptf
Curculionidae	Ptf	Ptf
Scolytidae	Ptf, Myp	Ptf, Myp
NEUROPTERA		
Hemerobiidae	Epr	Epr
Myrmeleontidae	Epr	Nf
LEPIDOPTERA		
Hesperidae	Ptf	Nf
Arctiidae	Ptf	Nf
Noctuidae	Ptf	Nf
Geometridae	Ptf	Nf
Pyralidoidea (superfamily)	Ptf	Nf
Pterophoridae	Ptf	Nf
Tortricoidea (superfamily)	Ptf	Nf
DIPTERA		
Tipulidae	S, Ptf	Nf
Psychodidae	S	Mp, Nf
Chironomidae	S	Nf, Aphid excretion
Simulidae	S	Mp
Bibionidae	S, Ptf	2/
Mycetophilidae	Myp	Nf
Sciaridae	Myp, S, Ptf	Nf
Cecidomyiidae	Ptf, S, Epr	2/
Therevidae	Epr	Psf 2/
Asilidae	Epr	Epr
Empididae	Epr	Epr
Dolichopodidae	Epr	Epr
Phoridae	S, Myp, Epa	S 2/
Pipunculidae	Epa, Epr	2/
Syrphidae	Epr, S, Ptf	Nf
Otitidae	Ptf, Epa	2/

Table 2.3-197 (Continued)

ORDER Family 1/	FOOD HABIT CLASSIFICATION Immature	Adult
DIPTERA (Cont.)		
Tephritidae	Ptf	2/
Sepsidae	S	S 2/
Sciomyzidae	Epr	2/
Chamaemyiidae	Epr	2/
Lonchaeidae	Ptf	2/
Chloropidae	Epr, Epa, Ptf, S, Mp	Nf 2/
Heleomyzidae	S, Myp	2/
Trixoscelidididae	2/	2/
Agromyzidae	Ptf	Nf
Anthomyiidae	Ptf, S, Epr	Nf 2/
Muscidae	S	S, Mp
Calliphoridae	S, Mp	S, Mp
Tachinidae	Epa	Nf 2/
HYMENOPTERA		
Xyelidae	Ptf	Nf
Tenthridinidae	Ptf	Nf
Braconidae	Epa	Nf
Ichneumonidae	Epa	Nf
Mymaridae	Epa	Nf
Eulophidae	Epa	Nf
Encyrtidae	Epa	Nf
Eupelmidae	Epa	Nf
Pteromalidae	Epa	Epr, Nf
Chalcididae	Ptf	Nf
Figitidae	Epa	2/
Cynipidae	Ptf, Epa	Nf
Proctotrupidae	Epa	2/
Ceraphronidae	Epa	Nf
Diapriidae	Epa	Nf
Scelionidae	Epa	Nf
Platygasteridae	Epa	Nf
Dryinidae	Epa	2/
Bethylidae	Epr	Nf
Formicidae	Epr, Ptf, S, Psf, Nf	Epr, Ptf, S, Psf, Nf
Vespidae	Epr, S	Nf, Pf
Sphecidae	Epr	Nf
Colletidae		
Andrenidae	Pf, Nf	Pf, Nf
Halictidae	Pf, Nf	Nf, Pf
Megachilidae	Pf, Nf, Epa	Nf
Apidae	Pf, Nf	Nf, Pf
SCORPIONIDA	Epr	Epr
CHELONETHIDA	Epr	Epr

Table 2.3-197 (Continued)

	FOOD HABIT CLASSIFICATION	
ORDER Family [1]	Immature	Adult
SOLPUGIDA	Epr	Epr
ARANEIDA		
Dictynidae	Epr	Epr
Hahniidae	Epr	Epr
Lycosidae	Epr	Epr
Oxyopidae	Epr	Epr
Gnaphosidae	Epr	Epr
Thomisidae	Epr	Epr
Salticidae	Epr	Epr
PHALANGIDA	S	S
ACARI	S, Mp, Epa, Epr, Psf, Ptf	S, Mp, Epa, Epr, Psf, Ptf
GEOPHILOMORPHA	Epr	Epr

[1] Common names, correct spelling, and taxonomic order from: Borror, D.J. and DeLong, D.M. 1971. An Introduction to the study of insects. Holt, Rinehart, and Winston. New York. 812 pp.

[2] Denotes families where food habits are unknown or little known.

(3) Seed feeder (Sf) - feeds largely on seeds at some stage of it's life cycle.

(4) Nectar feeder (Nf) - feeds on plant nectar.

(5) Pollen feeder (Pf) - feeds on pollen at some stage of it's life cycle.

(6) Fungus feeder (Myp) - feeds on fungi.

(7) Scavenger (S) - feeds on dead and decomposing plant and animal material.

(8) Omnivore (O) - feeds on both plant and animal material.

(9) Entomophagous predator (Epr) - feeds on insects and other arthropods.

(10) Mammalian predator (Mp) - feeds largely on secretions around vertebrate eyes and sores, or under the skin of mammals.

(11) Entomophagous parasite (Epa) - spends one or more life stages feeding upon and destroying only one insect.

In determining percentages of food habits, categories 1-3 are considered herbivores, 4 and 5 - flower feeders, and 9 to 11 - predators.

A composite list of all invertebrate families captured and their feeding types is presented in Table 2.3-197. Results of calculations of percentage of each food habit for invertebrates taken by sampling type are presented in Tables 2.3-198 through 2.3-204.

2.3.9.3.2.1 Pitfall Sampling

Percentage calculations of invertebrates in each feeding category are based only on the invertebrates used in estimating density, that is, those in some way tied to the area within the pitfall grid.

At Site 1 (greasewood-sagebrush), scavengers were the numerically dominant feeding type, although 3 other feeding types had over 10 percent of the total numbers (Table 2.3-198). Scavengers at Site 1 were primarily harvestmen (Phalangida). Predators, the second largest feeding group at Site 1 were almost exclusively spiders (Araneida), and ground beetles (Carabidae).

Table 2.3- 198 Percentages of ground dwelling invertebrates within each feeding type collected by pitfall traps at each sampling site during June, 1975 for RBOSP

	Site 1	Site 2	Site 3	Site 4	Site 5
Herbivores	6	0	0	0	4
Flower feeders	0	0	0	0	0
Fungus feeders	0	0	0	0	0
Scavengers	36	90	62	92	23
Omnivores	20	2	10	5	30
Predators	27	2	20	1	21
Unknown	11	6	8	2	22

Table 2.3- 199 Percentages of invertebrates within each feeding type taken in Litter D-vac samples at each site during June, 1975 for RBOSP

	Site 1	Site 2	Site 3	Site 4	Site 5
Herbivores	16	0	23	2	8
Flower feeders	0	0	0	0	0
Fungus feeders	0	0	0	0	0
Scavengers	2	0	0	14	19
Omnivores	2	100	23	74	32
Predators	55	0	38	4	14
Unknown	25	0	16	7	27

Table 2.3-200 Percentages of invertebrates within each feeding type taken in Trap D-vac samples at each site during June, 1975 for RBOSP

	Site 1	Site 2	Site 3	Site 4	Site 5A	Site 5B
Herbivores	45	40	25	13	7	13
Flower feeders	4	3	1	0	3	3
Fungus feeders	2	0	0	0	1	0
Scavengers	1	2	0	5	3	0
Omnivores	14	12	35	59	42	61
Predators	5	11	20	12	9	4
Unknown	30	33	18	12	35	18

Table 2.3- 201 Percentages of invertebrates within each feeding type in herbaceous sweep samples at all sites during June, 1975 for RBOSP

	Site 1	Site 2	Site 3	Site 4	Site 5
Herbivores	57	48	52	18	48
Flower feeders	13	23	18	45	28
Fungus feeders	2	0	0	0	2
Scavengers	0	2	0	0	0
Omnivores	13	15	28	27	16
Predators	3	4	3	9	0
Unknown	12	8	0	0	6

Table 2.3- 202 Percentages of invertebrates within each feeding type taken in beating samples from plant species at sites 1, 2, and 3 during June, 1975 for RBOSP

	Site 1	Site 2		Site 3	
	Sage	Pinyon	Juniper	Pinyon	Juniper
Herbivores	52	15	87	25	53
Flower feeders	8	0	2	0	6
Fungus feeders	0	0	0	0	0
Scavengers	0	0	0	0	0
Omnivores	8	50	0	0	0
Predators	6	9	7	67	35
Unknown	26	26	4	8	6

Table 2.3-203 Percentages of invertebrates within each feeding type taken in aerial sweep samples from plant species at sites 1, 2, and 3 during June, 1975 for RBOSP

	Site 1	Site 2		Site 3	
	Sage	Pinyon	Juniper	Pinyon	Juniper
Herbivores	78	28	95	0	60
Flower feeders	13	28	3	0	0
Scavengers	1	0	0	0	0
Omnivores	0	0	1	33	0
Predators	8	43	1	67	40
Unknown	0	0	0	0	0

Table 2.3-204 Percent invertebrates taken within each feeding type in Malaise trap samples at all sites during June, 1975 for RBOSP

	Site 1	Site 2	Site 3	Site 4	Site 5
Herbivores	4	7	17	11	5
Flower feeders	66	69	62	74	70
Fungus feeders	0	0	0	0	0
Scavengers	4	2	2	0	4
Omnivores	0	0	0	0	0
Predators	3	4	3	3	2
Unknown	21	18	14	12	19

The Site 2 (pinyon-juniper/south slope) invertebrate smples were also dominated by scavengers, the primary feeding type of the 1,500 Collembola captured there. Results from Site 3 (pinyon-juniper/north slope) resemble Site 2 although the decreased numerical dominance of Collembola at Site 3 results in the other feeding types appearing more important.

Site 4 (sagebrush) was also dominated by Collembola, therefore, 92 percent of the invertebrates from pitfalls at the site were classified as scavengers.

Site 5 (mixed brush) had the most even distribution of individuals into feeding types, with four feeding categories containing over 20 percent of the total captures. The largest feeding group was classified as omnivorous and was dominated by ants.

2.3.9.3.2.2 Litter D-Vac Sampling

Results for Site 1 (greasewood-sagebrush) Table 2.3-199) show the predator level as the most abundant, due to the influence of spiders and ground beetles, the two most abundant groups captured. The unknown category consists mainly of mites. Herbivores, the third largest feeding type consisted of a variety of families in the orders Thysanoptera, Hemiptera, Homoptera, Coleoptera, and Lepidoptera. At Site 2 (pinyon-juniper/south slope), the lack of an adequate sample size resulted in 100 percent scavengers (3 ants). At Site 3 (pinyon-juniper/north slope), the same problem of small sample size existed, although the variety of insects increased. The largest feeding type, predator, consisted of 5 invertebrates; 4 beetles (Coleoptera) and a spider (Araneida). The total numerical dominance of ants (Formicidae) at Site 4 (sagebrush) is the reason why 74 percent of the invertebrates in litter D-Vac samples from this site were categorized as omnivores. The next largest feeding type (Scavengers) was made up primarily of Collembola, the only other order taken in significant numbers at Site 4. Ants were the most abundant family captured at Site 5 (mixed brush), hence, the high percentage of omnivores. Other abundant groups and their feeding types at Site 5 were: springtails (Entomobryidae) - scavengers, and mites (Acari) - unknown. The predator level consisted of a variety of Coleoptera and Araneida.

2.3.9.3.2.3 Trap D-Vac Sampling

Because of the assumptions about feeding type made in determining which families were used in quantitative calculations of density per cubic meter, percentages of invertebrates in different feeding categories were based on all invertebrates captured in the samples rather than only those tied to the particular plant species by feeding. Results are presented in Table 2.3-200.

At Site 1 (greasewood-sagebrush), herbivores were the dominant feeding type, made up primarily of thrips (Thysanoptera) and hoppers (Homoptera). The second largest group, unknowns, consisted primarily of mites (Acari) and a family of ant-like flower beetles (Anthicidae).

Results for Site 2 (pinyon-juniper/south slope) indicate herbivores are the most abundant feeding group. Of the groups listed as herbivores, the most abundant is a species group of Lepidoptera larvae in the superfamily Tortricoidea. The second most abundant feeding group, unknowns, consisted entirely of mites. As at all other sites, ants (Formicidae) were the only family in the Omnivore category.

At Site 3 (pinyon-juniper/north slope), the numerical dominance of ants is reflected in the high percentage of invertebrates in the omnivore feeding group. In this case, as at other sites it is suspected that most ants were at the ground level below the plant when sampled, and consequently, are probably not part of what is considered the fauna of the plant. However, it is possible that some may be up in the plant tending aphids thus becoming an indirect factor in the fauna feeding on the plant. The only plant feeder found in substantial numbers was a species of snout beetle (Curculionidae).

Ants dominated the samples from Site 4 (sagebrush). Therefore, the majority of invertebrates (59 percent) captured in trap D-Vac at this site were classified as omnivores.

The ants were probably not in the foliage, and in this particular case, it appears that in sampling, the trap was placed over an ant nest at the base of one of the sagebrush plants sampled. Unknowns were primarily mites (Acari). Herbivores and predators were made up of a variety of families in several orders.

Virtually the same conditions exist at Sites 5A (mixed brush) and B as at Site 4 with respect to the two most abundant feeding types (omnivores and unknowns). At Site 5A, the remaining 23 percent of the inverbrates taken from serviceberry were mainly herbivores and predators. In the herbivore category, two families, Curculionidae, and Noctuidae larvae made up the bulk of the numbers captured. At Site 5B, herbivores made up 13 percent of the invertebrates taken from snowberry.

2.3.9.3.2.4 Herbaceous Sweep Sampling

Herbaceous sweep samples represent a reasonably accurate measure of the invertebrate fauna of a specific portion of the habitat. As such, they can be valuable in interpreting faunal characteristics within a habitat and between similar habitats, provided the emphasis is on the fauna itself rather than on quantitative measurements. Results for calculations of food habits for invertebrates found in the herb-shrub-grass stratum at five sample sites are presented in Table 2.3-201.

Herbivores made up 57 percent of the fauna at Site 1 (greasewood-sagebrush), primarily thrips (Thysanoptera) and leafhoppers (Cicadellidae). The leafhoppers are probably host species specific, however, it is not known whether this is also true for thrips, many of which have several plant species as hosts. Flower feeders were made up of a variety of flies (Diptera) and wasps and bees (Hymenoptera) with no family or species group dominating the total number.

At Site 2 (pinyon-juniper/south slope), herbivores were again the largest group with plant bugs (Miridae) dominating. The bulk of the flower feeders were eulophid wasps (Eulophidae), flower feeders as adults, but internal parasites as larvae.

Of the 22 invertebrates captured at Site 3 (pinyon-juniper/north slope), one species of delphacid planthopper (5 individuals) was the most abundant herbivore. Omnivores make up the second largest feeding group sampled.

At Site 4 (sagebrush), only 22 invertebrates, half of which were dipteran and hymenopteran flower feeders, were taken in 100 sweeps. Most of these are parasitic wasps which could be in the area looking for hosts for oviposition rather than feeding. Only four herbivorous insects were taken in the sample.

Herbivores comprised 48 percent of the invertebrates captured at Site 5 (mixed brush) half of which were plant bugs (Miridae) and checkered beetles (Cleridae). Site 5 is the only area where the checkered beetles were captured. Flower feeders, the second largest feeding type contained 7 families, the most abundant of which was Agromyzidae. As adults, these flies feed on nectar, but as larvae they are herbaceous leaf miners.

2.3.9.3.2.5 Beating Samples

Beating samples were taken along with aerial sweeps to provide qualitative data on the invertebrate fauna associated with 3 plant species too large to be sampled efficiently by other methods. The main emphasis of analysis was to determine which, if any, of the associated fauna are tied to the plant in a feeding or other type of relationship. Results of feeding habits of the invertebrates collected in beating samples are presented in Table 2.3-202.

Results of beating samples from tall big sagebrush plants (Artemisia tridentata) (Site 1) indicate that 52 percent of the invertebrates collected are herbivores, primarily of the order Homoptera. Within this order, species of leafhoppers (Cicadellidae) and aphids (Aphididae) are both probably host species specific for sagebrush.

Beating samples from pinyon at Site 2 (pinyon-juniper/south slope) contained 32 insects, including 16 ants. Omnivores (all ants) made up 50 percent of the total invertebrates captured. Herbivore families were aphids (Aphididae), and bark beetles (Scolytidae). Both families have many species which are host species specific. Site 2 juniper samples yielded 105 individuals of one species of plant bug (Miridae). The relative abundance of this species accounts for the high percentage (87 percent) of herbivores in the sample.

Site 3 (pinyon-juniper/north slope) beating samples from pinyon contained 12 invertebrates, half of which were spiders. Predators were the most abundant feeding type at Site 3 and include all the spiders and 3 hemipterans (Reduviidae). No plant feeders found on pinyon at Site 2 were present in beating samples at Site 3. Juniper samples at Site 3 contained 17 invertebrates; 53 percent were classified as herbivores. This percentage includes 4 individuals of the plant bug family (Miridae) taken abundantly at Site 2. Other herbivore families are leaf beetles (Chrysomelidae) and snout beetles (Curculionidae).

2.3.9.3.2.6 Aerial Sweep Sampling

Aerial sweeps were taken from sagebrush (Site 1 - greasewood-sagebrush) and pinyon and juniper at Sites 2 and 3 (pinyon-juniper, north and south slopes). Results are presented in Table 2.3-203.

The 50 sweeps from sagebrush at Site 1 (greasewood-sagebrush) contained 100 invertebrates, 78 percent of which were classified as herbivores. Most of these were one family of plant bug (Miridae). This family was also taken from beating samples of sage although its relative abundance was much less in the beating samples. The other abundant herbivores adding to the total percentage included two species groups of thrips (Thysanoptera).

Sweeps from pinyon at Site 3 (pinyon-juniper/north slope) contained two herbivore species and three predator species. Juniper sweep samples from Site 2 support the evidence from beating samples that the numerically dominant feeding group (95 percent herbivores at this site) results primarily from the large numbers of one species of Miridae. The second largest family, also herbivorous, is Sminthuridae, the globular springtails. The five individuals of this family were the only taken in all sampling of juniper.

Pinyon sweep samples at Site 3 (pinyon-juniper/north slope) yielded only eight invertebrates, 67 percent of which were classified as omnivores. Juniper sweep samples at this site revealed 20 invertebrates; 12 of these were plant bugs (Miridae) accounting for the 60 percent herbivores collected.

2.3.9.3.2.7 Malaise Trap Sampling

The relative abundance of flower feeding adult Hymenoptera and Diptera was high at all sample sites (Table 2.3-204) due to the fact that the malaise trap is designed to capture these airborne invertebrate groups. The high percentage of unknowns at each sample site is attributed to the abundance of gall midges (Cecidomyiidae) at these sites, and combinations of big-headed flies (Pipunculidae), aphid flies (Chamaemyiidae), lonchaeid flies (Lonchaeidae), and trixoscelidid flies (Trixoscelididae) at the sample sites. It is felt that in most cases these adults are flower feeders, or scavengers of plant liquids, but lack of confirmed dietary information in the literature prevented their being included in those feeding groups.

All of the very abundant dipteran families are flower feeders except Callophoridae (scavenger) and Therevidae (herbivore) and those listed above as unknowns.

Most of the herbivore feeding group is comprised of families from the orders Hemiptera, Homoptera, and Coleoptera. At Site 3 (pinyon-juniper/north slope) the high herbivore percentage is attributed to members of the 3 orders (Hemiptera, Homoptera, and Coleoptera) and to the large number of Therevidae.

2.3.9.4 Summary and Conclusions

Seven different methods (pitfalls, litter D-Vac, trap D-Vac. herbaceous sweeps, beating, aerial sweeps, Malaise traps were employed to sample invertebrates both quantitatively and qualitatively at five sites, each in a different vegetation type during June 1975.

Ground dwelling invertebrates, as sampled by pitfalls and litter D-Vac techniques were most abundant at Site 4 (sagebrush). The predominant ground dwelling groups in samples from all sites included Collembola (the most abundant), mites (Acari), spiders (Araneida), and ants (Hymenoptera - Formicidae).

The dominant species within the shrub and tree strata and the herbaceous stratum were sampled by ground level sweeps (herbaceous), trap D-Vac samples, beating samples and aerial sweeps. The primary emphasis of these samples was to identify species of invertebrates which potentially have close relationships with the plant species they inhabit, and to give rough quantitative estimates of their density per cubic meter of the dominant shrub species.

A comparison of trap D-Vac and herbaceous sweep results indicates that sagebrush (Artemisia tridentata) has the largest invertebrate fauna per unit area of plant, followed closely by rabbitbrush. In herbaceous sweep samples, the largest number of invertebrates was taken at the greasewood sagebrush site (Site 1). Overall, it appeared that the two sagebrush sites had the largest total invertebrate populations in the shrub and ground vegetation strata. Predominant invertebrate groups captured by trap D-Vac included Curculionidae, Formicidae, and Acari at all sites, as well as Thysanoptera and Anthicidae on individual plant species. For herbaceous sweep samples, the predominant invertebrate families captured were Cicadellidae and Formicidae for all sites.

Beating and sweeping samples from tall shrubs and trees at Sites 1, 2, and 3 (greasewood-sagebrush, pinyon-juniper/south slope and pinyon-juniper/north slope) showed the overall invertebrate abundance to be greatest at Site 2 juniper, followed by sagebrush. Comparisons between north and south slope pinyon-juniper sites (Sites 3 and 2) show a distinct difference in total invertebrate numbers, with both pinyon and juniper trees yielding larger numbers of invertebrates at Site 2 (south slope). Within these sites, it appears from samples that the population of invertebrates inhabiting juniper trees is much larger than that from pinyon trees.

Predominant groups from sagebrush included Miridae, Cicadellidae, Aphididae, Acari, and Thysanoptera. In pinyon samples, one species of ant (Tapinoma sessile) was the most abundant species taken, and in juniper samples one species of Miridae was found most abundantly in nearly every sample.

Adjusted totals for Malaise samples indicate that invertebrates were most abundant in the pinyon-juniper/north slope site (Site 3). Predominant groups sampled by Malaise traps were at all sites in the order Diptera, with Chironomidae the most abundant family collected. Other abundant families of Diptera were Mycetophilidae, Sciaridae, Cecidomyiidae, Syrphidae, Chamaemyiidae, Trixoscelididae, Anthomyiidae, and Callophoridae. In Hymenoptera, predominant families captured by Malaise traps were Ichneumonidae, Broconidae, and Pteromalidae.

Overall, it appears that Site 4 (sagebrush) supported the most abundant invertebrate fauna of all sites sampled.

2.3.9.5--INVERTEBRATES RAW DATA

2.3.9.5--INVERTEBRATES RAW DATA

C.11.3.1-1 ECI
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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83 Site Name & Number Site X

Collection Date June Species List Ref. No. 83 A PF

Sampling Means pitfall Sorting Means hand

Species Reference Number	Sample Number 5	6	16	26	44	61	82	112	137	142	Total
19 1	1						1				
19 ✓ 2	1										
19 ✓ 3	1										
19 4	3	2	1		4	1	2	6	3	2	
18 ✓ 5	12	5	5	1	3	9		1		1	
18 ✓ 6	1										
17 ✓ 7	1								1		
04 8	7	3					1		1		
02 9	1	1				1	10	2		2	
34 10	4	7	8	6	3		7	6	4	1	
07 ✓ 11	1					2	1				
24 12	1	3		2	3	1		2	1	1	
24 13	1										
33 14	1	2	1		1		1	1			
35 15	1	14				2	5		1		
18 ✓ 16	2					1					
27 17	4	2	1	9	4	4	6	8	3	4	
22 ✓ 18		1									
33 19		2									
19 20		1									
19 ✓ 21			1				3	1	1		
19 22			1								
33 23			1	1		2	1			1	
18 ✓ 24			1								
35 25			1								
24 ✓ 26			1								
27 ✓ 27			1								
24 ✓ 28			1								
19 29				1							
19 30				1							
19 31				1							
19 32				1							
19 ✓ 33				1				1			
18 ✓ 34				1							
17 ✓ 35				1							
33 36				2							
33 37				1	1		1				
25 ✓ 38					1						
5 ✓ 39					1					2	
33 40					2						

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Page 2 of 2

Project 83 Site A Sp.list ref. no. 83A PF Date May-June 75

			5	16	16	26	44	61	92	112	137	142	
27		41					1						
19		2						1					
19	✓	3						1					
19	✓	4						1					
33		5						1					
25	✓	6						1					
18	✓	7						1					
19	[illegible]	8	[illegible]						1		1		
19		9							1			1	
18	✓	50							1				
17	✓	1							1				
25	✓	2							1				
33		3								1	1		
19	✓	4									1		
07	✓	5									2		
33		6									1		
04		7									1		
04		8									1		
19		9										1	
16	✓	60										1	
16	✓	1										2	
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LAB ANALYSIS - INVERTEBRATES

Project Name & Number 83 Rio Blanco Site Name & Number site B

Collection Date June Species List Ref. No. 83B PF

Sampling Means pitfall Sorting Means hand

Species Reference Number		Sample Number 1	7	17	27	45	62	83	113	138	143	Total
04	1	1						5		4	1	
04	2	1	9	[illegible]	6	24	21		3			
04	3	1					2					
19 ✓	4	1	1			1						
19	5	1			1			1				
~~FE~~ 27	6	1	1	1	1			2				
16 ✓	7	1		1						1		
28	8		1							1		
19 ✓	9		1									
19	10		1									
19	11		1									
19 ✓	12		1									
27	13		5	2	1				2		1	
27	14		1				1			1	1	
02	15		2		1			1				
04	16		36	16	355	[illegible]	15	10	5	49	7	
18 ✓	17		1			1						
18 ✓	18		1									
33	19		2									
33	20								1			
25 ✓	21		1		1							
16 ✓	22		1									
19	23			1								
35	24			3	10	[illegible]	7	22	26	9	1	
04	25			2					1			
19 ✓	26			1								
24 ✓	27				1							
04	28				3							
19	29				2				1			
19	30				2			1				
19 ✓	31				1							
19	32				1							
27	33				1	1						
29	34				1					2	1	
33	35				1							
19 ✓	36				1							
26 ✓	37								1			
[illegible]	38					1						
[illegible]	39					2						
04	40					1						
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C.11.3.1 -4

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Page 2 of 2

oject 83 Site B Sp.list ref. no. 83B PF Date May-June 75

04		41				|		|					
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27		4				|			1				
33		5				2								
33		6				12			3					
19	✓	7				|			+ 1					
27	✓	8				|							
19		9				|							
19	✓	50				|							
27	✓	1					|						
04		2					|						
27		3					3						
33		4					2			/	3		
33		5					|						
33		6					|						
33		57					|						
25 [illegible]	✓	58						|					
17	✓	59						|					
19	✓	60						|					
02		61							|				
19	✓	62							|	2			
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C.11.3.1-5

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number 83 [illegible]

Site Name & Number SITE 8 3

Collection Date [illegible]

Species List Ref. No. 83 C PF

Sampling Means PITFALL

Sorting Means HAND

Species Reference Number		Sample Number										Total
		#3	#9	#19	#29	#37	#63	#85	#114	#129	~~30~~ 144	
04	1	1					1					
04	2	1					1	1	1	1		
19	✓ 3	1										
27	4	1						1				
27	5	1	1		2		1					
27	6		1									
17	✓ 7		2	2	1	1	1	2	1	1	8	
24	8			1								
19	9		[illegible]	3	7	8	11	4	9	[illegible]	5	5
19	✓ 10			2	1					1		
19	11			1								
19	✓ 12				1							
27	13				1		2	2	1			
04	14				6		77	13	11		10[illegible]	
19	✓ 15					1				1		
19	✓ 16					1						
04	17					1				1		
04	18				1	1	1	1			1	
29	19						1					
27	20						1				6	
04	21						3					
04	22						2					
27	23							1		2	1	
19	✓ 24						1					
27	25								2	5	5	
27	26								1			
19	27								1		2	
19	✓ 28								1			
19	✓ 29								1			
27	30									1		
19	✓ 31									1		
04	32									1		
04	33										15	
19	34											
19	✓ 35								5	1		
35	36	1	1	2	14	6	3	2	75	3	1	
33	37		1				1		1	1	1	
33	38	1	2		1	1			1		1	
33	39				1							
30	40							1				

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Page 2 of 2-

Project 83 Site C Sp.list ref. no. 83CPF Date May-June 1975

		3	9	19	29	47	63	85	114	139	144	
33	41	1						1				
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LAB ANALYSIS - INVERTEBRATES

4

Project Name & Number 83-02
Site Name & Number Site D upland sage
Collection Date May-June 1975
Species List Ref. No. 83 D PF
Sampling Means pitfall BCL
Sorting Means Hand

Species Reference Number	Sample Number 14	10	20	30	48	65	86	115	140	145	Total
04 1	831	665	94	27	33	594	236	10	7	939	
04 2	1		1		1	1		1	2		
04 3	2			1	1	3			1	2	
17 ✓ 4	2		6		1				3		
17 ✓ 5	1										
19 6	2					1					
24 7	1	1	1	3	4	1	2	1	2	1	
27 8	2	2		12	5	1	4	8	17	2	
27 9	6		7		3		19	2	5	17	
27 10	3	3	21	24		6	7	1	10	7	
27 11	1								1		
27 12	1	1						1			
27 13	1										
27 14	1					1					
19 15		2						1			
19 16		2									
19 17		1									
19 18		1						1			
19 19		1					1				
07 ✓ 20		1									
27 21		3		1		1			4	1	
27 22		6				8					
27 23		1		2	2		3	1	1	3	
27 24		1				2			5	1	
19 25			1	1							
19 ✓ 26			1							1	
17 ✓ 27			1								
19 28				1	7				1	1	
18 ✓ 29				1	1					2	
18 ✓ 30				1							
19 31				1							
17 ✓ 32				1			2				
27 ✓ 33				1							
07 ✓ 34				1				1	2		
07 ✓ 35					1		1		3		
19 ✓ 36						1					
19 ✓ 37						1					
17 ✓ 38						1					
27 ✓ 39						2				1	
04 40						4		2			

Page 2 of 2

Project 83 Site D Sp.list ref. no. 930-PF Date MAY/JUNE 75

		4	10	20	30	41	55	65	115	140	165	
04	41						2					
07	42							1				
19	43							1				
17	✓ 44								1			
17	✓ 45									1		
18	✓ 46									1		
07	47										1	
35	8	11	4/31	3	20	17	12	4	27	14	9	
33	9	1				2				1		
33	50	4	4	2	2	3	1	2		2		
33	1		1						2	1		
33	2		3	2	2	4		1	4	1		
33	3		1		1			1				
19	4		1			1					1	
33	5					[illegible]			1			
33	6										1	
	7											
	8											
	9											
	0											
	1											
	2											
	3											
	4											
	5											
	6											
	7											
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	4											
	5											
	6											
	7											
	8											
	9											
	0											

C. 11.3.1-9 ECI
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LAB ANALYSIS - INVERTEBRATES

Project Name & Number [illegible] 93
Site Name & Number SITE [illegible]
Collection Date MAY-JUNE '75
Species List Ref. No. 93[illegible] PF
Sampling Means PITFALL GRID
Sorting Means HAND

Species Reference Number		Sample Number 1 2	2 8	3 18	4 28	5 46	6 [illegible]	7 84	8 116	9 141	10 146	Total
21	1	3	2	1	2		2	1			2	
27	2	2		1			2					
27	3	1	1		1		1	2			1	
27	4	1		1						1	1	
27	5	2	1									
21	6	3	3								2	
07	7	1										
07	8	1		1		1					1	
19	✓ 9	1	1									
04	10	1	1		1							
04	11	3	1		1	1	3		1			
04	12	1	1		2	2	4					
04	13	1										
02	14	5	4	1	3	3		2	4	2		
17	✓ 15		1						2			
18	✓ 16		1	1		1	1	1		1		
27	17		1				2			1		
27	18		3	3	2		2	1	5		4	
19	(19)		2	1			1	1		2		
19	20		1	1	1	1		1	2	1		
19	✓ 21		1									
19	✓ 22			1								
17	✓ 23			1	1				1			
04	24			1	1		1		1			
27	25				1							
19	26		1						1			
19	✓ 27				1							
19	✓ 28				1							
19	✓ 29				1	1			1	1		
18	✓ 30					1			1			
04	31				2							
04	32				1							
18	✓ 33					1	1					
19	✓ 34					1						
27	35					1	1				1	
18	✓ 36						1					
9	37						2					
19	38						1					
19	✓ 39						1					
27	40						1					

✓ Checked - were not figured in totals; behavior indicates they fly commonly and are not restricted to grid

C.11.3.1-10 (ECI)
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Page 2 of 2

Project 73 Rio [illegible] Site 5 Sp.list ref. no. 83CPF Date [illegible]

			2	8	18	28	46	64	84	116	141	146	
27		41						1					
19		42						1			1		
19		43						1					
18	✓	4								1			
27		45								1			
19	✓	46										1	
19	✓	47										1	
19	✓	48					1						
35		9		1	2	1	2	5	1	3	2	4	
33		50		1	1	1	1		1			1	
34		1	1		2	3	1			3	3		
19		(2)			1		1			1			
33		3		2	1	3	3	48	2	2			
33		4	2	2	2	2	1	3	2		3		
33		5	1		2		1						
24		6			1								
24		7						1					
33		8				1							
33		9											
24		60				1							
17	✓	1							1				
24		62			1	1	1		1			1	
19	✓	3			1	1							
		4											
		5											
		6											
		7											
		8											
		9											
		0											
		1											
		2											
		3											
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		4											
		5											
		6											
		7											
		8											
		9											
		0											

C.11.3.1-11a

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RBOSP [illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site A

Sampling technique pitfall

Species List Reference No. 83A PF

Taxonomic Information Collembola

Thysanura, Procoptera

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Collembola Entomobryidae	83A PF8	[illegible]		purple			4th abdom. seg 2X as large as 3rd			
Sminthuridae	83A PF57		1	yellow, blk.	yellow	blk				
Sminthuridae	83A PF58		1	purple						
✓ Thysanura Machilidae	83A PF9	B-15 5-14 B-61	3	tan	eyes contiguous					

RDCCP PROGRESS REPORT

C. 11.3.1-11b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Psocoptera	23A P47		1.1	brown					wingless	

C. 11.3.1-12

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site A

Sampling technique pitfall

Species List Reference No. 83A PF

Taxonomic Information Hemiptera

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Lygaeidae	83A PF 7	C-59 C-7 C-4 5-15	6	white w/blk. punctua				brown w/blk spots		
Lygaeidae	83A PF 7	11	3	blk/white	blk.	blk/white punctate	white, punctate			
Unknown Hemip.	83A PF 7	11	1.5	yellow with red						

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.1-13

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[illegible]

Project name and number Rio Blanco E3

Site name and number Site A

Sampling technique pitfall

Species List Reference No. E3 A PF

Taxonomic Information Homoptera

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Cicadellidae nymphs	83A PF 50	B-17 C-31 D-29 5-16	1-2.5	tan w/ brown longitud stripes						
Cicadellidae	83A PF 50	"	2.5	yellow/ blk	yellow w/white	yellow/w white	blk.			
Cicadellidae	83A PF50	"	5	brown/ blk. mottled						
Aphididae	83A PF 50	"	3	brown						
Psyllidae	83A PF 50	"	2	yellow w/white						
Aphididae	83A PF 50	"	1	yellow						

C.11.3.1-14a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site A

Sampling technique pitfall

Species List Reference No. 83 A PF

Taxonomic Information Orthoptera, Neuroptera, Lepidoptera, Thysanoptera

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Acrididae nymph	83A PF11	S-7 D-20 D-34 D-35	6	tan w/ brown + pinkish tones						
Gryllacrididae	83A PF55	D-47 S-7	5	yellow white						
Neuroptera Chrysopidae larvae	83A PF18		3	white w/grey-purple	long sickle-shaped mandibles	protruding tubercles with long setae		empodium trumpet-shaped		
Phlaeothripidae	83A PF60		2.8	blk	1st 3 ant. seg. yellow, remaining blk	convex prothorax				
Phlaeothripidae	83A PF [illegible]		1.3	blk						

C.11.3.1-12/6

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
LEPIDOPT. Pyralidae larva ?	83A PF12	A-13 5-56	15	brown w/broad light stripe dorsally	brown & white mottled					
LEPIDOPT Pyralidae larva	83A PF13	A-12 5-56	10	brown bumpy, light dorsally						
adult	83A PF26									
Lepid larva	83A PF28		17	blk.						

C.11.3.1-15a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco [illegible]
Site name and number Site A
Sampling technique pitfall

Species List Reference No. 83A PF
Taxonomic Information Coleoptera
Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Carabidae	83A PF1	[illegible]	8	dk. brown	blk.	dark brown	lighter		striated longitudinally	
Cerabidae larve	83A PF4		6	light brown	brown	tan	tan			
Carabidae	83A PF22	5-19	21	blk.						
Coccirellidae	83A PF2		4	orange w/blk. & white	blk/white	blk/white	orange w/blk & white	blk.		
[illegible]	83A P3		3	brown				front coxae prominent	fine sinuate transverse lines	
TENEBRIONIDAE ~~[illegible]~~	83A PF20	5-21	5	blk.	eyes divided			~~front coxat cavities open~~ behind	punc. in rows	
Elateridae	83A PF21		10	brown/ met green	brown	brown	met green striated longitudinally	[illegible] brown		

C.11.3.1-156

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Histeridae 1 x	83 A PF29		3.5	blk., shiny punctate				tibia spinose	elytra truncate	
Histeridae 1 x	83 A PF30	5-4[illegible]	3.2	brown shiny punctate				tibia spinose	elytra truncate	
Carabidae x 1	83 A PF31	A-1, A-32	8	blk, slight met. sheen		median dorsal groove on prothorax		brown	striated longitudinally	
Carabidae 1 x	83 A PF32	A-1, A-2	8	blk & slightly met. blue	blk.	blk.	slightly met. blue, striated longitudinally			
Carabidae x 1	83A PF42		11	red-brown						
Curculionidae	83 A PF43	[illegible]-10	10	blk.		punc.	punc. in rows			
Chrysomelidae	83 A PF34		3	blk.		punc.	punc.		blk. with yellow stripe on each elytra	
Elateridae	83 A PF33	E-12, E-15	8.5	blk.		prothorax convex	punc. in rows	hind femure enlarged		

C.11.3.1-16

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number Site A

Sampling technique pitfall

Species List Reference No. 83A PF

Taxonomic Information Coleoptera

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Tenebrionidae 2	83A PF48	11-15	17	blk.	eyes emarginate	rough	rough			
Carabidae 2	83A PF49		17	blk			round-oval irregular punc.			
Scarabaeidae 1	83A PF54	5-69	13	red-brown						
Carabidae 1	83A PF59		11	red-brn			striated longitudinally			
Carabidae 1	83A PF62		3	blk					elytra somewhat truncate	

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.1-17

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Project name and number Rio Blanco 83

Site name and number Site A.

Sampling technique pitfall

Species List Reference No. 83A PF

Taxonomic Information Diptera

Identifier S Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Phoridae	83A PF38	B-50	1.4	brown						
Anthomyiidae	83A PF39	B-21	5	blk.			blk w/orange ventrally			
Sciaridae	83A PF46		1.4	brown	ocelli, eyes meet above head					
Calliphoridae	83A PF52		8	blk. & met. blue	blk. Face w/orange		met. blue			

C.11.3.1-18a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number site A
Sampling technique pitfall
Species List Reference No. 83 A PF
Taxonomic Information Hymenoptera
Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Formicidae	83 A PF 17			brown	orangish-brown	orangish brown thoracic spines rudimentary	brown 1 seg. petiole broad, almost lobed			
Formicidae	83 A PF41		5	brown	sculp, brown	sculp, brown	smooth 2 seg. petiole yellowish, darker posteriorly			

C.11.3.1-18b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Ichneumonidae	83A PF27		12	red-orange w/blk						

C.11.3.1-19

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio BLANCO

Site name and number Site A

Sampling technique Pitfall

Species List Reference No. 83A PF

Taxonomic Information Arachnida

Identifier C. Homans

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Therididae	83A PF66									
Lycosidae	83A PF67									
Salticidae	83A PF68									
Acari	83A PF69									

C.11.3.1-20a

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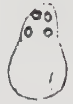
TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site A
Sampling technique pitfall

Species List Reference No. 83A PF
Taxonomic Information PHALANGIDA, ACARI ARANEIDA
Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	[illegible] Other [illegible]
Phalangida	83A PF16	5-51								
Acari	83A PF15	5-24 5-47 5-47 2-36								
Araneida Lycosidae	83A PF14	D-52 5-54 B-54	3.5	brown				3 claws		
Araneidae	83A PF19		3	brown /grey	tan	tan	grey pubescent	tan ? claws		
Hahniidae	83A PF23	5-56	3.5	brown/ tan	brown	brown shiny	6 spinnerets in a transverse row light tan, pubesc.	3 claws		
Gnaphosidae	83A PF25	[illegible]	6	brown/ grey	brown	brown	grey spinnerets cylindrical	2 claws		
Pisauridae	83A P36		4	brown / grey	brown	[illegible]	[illegible]	trichobothria on tarsi numerous 3 claws [illegible]		

C.11.3.1-20b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Gnaphosidae	83A PF37	[illegible]		brown/ blk.	brown	brown	blk.	brown		
Gnaphosidae	83A PF40	[illegible]	8	brown/ grey	brown	brown	grey pubescent	spiny		
Thomisidae	83A PF45	D-47	3.5	brown						
Gnaphosidae	83A PF53	[illegible]	9	light tan			(!)	spiny		
Gnaphosidae	83A PF56	[illegible]		blk						
unknown spiders	83A PF63									
Clubionidae	83A PF64									
Dictyniidae	83A PF65									

C.11.3.1-21a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number site B

Sampling technique pitfall

Species List Reference No. 83B P

Taxonomic Information Collembola, Thysanura, Thysanoptera, Scorpionida, Acari

Identifier S Taylor

RBOSP [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Isotomidae	83 B PF1		1	purple						
Entomobryidae	83 B PF2	2-17 5-31	1.5	white w/ purple antennae						
Isotomidae	83 B PF3		1	dk purple						
Isotomidae	83 B PF16	[illegible] 2-14, 5-4	.7	purple						
Entomobryidae	83 B PF 5	2-[illegible]	1.5	[illegible]/dk [illegible] markings						
Entomobryidae	83 B PF28		1	light purple						
Entomobryidae	[illegible]		3							

C.11.3.1-21

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing..T	Other
Thysanura Machilidae	83B PF15	A-9 5-14 B-61	2.5	brown	eyes contiguous					
Thysanoptera Thripidae	83B PF22		1	brown						
Collembola Sminthuridae	83B PF40	[illegible]	.8	yellow						
Collembola Sminthuridae	83B PF41	D-45	.6	dk. purple						
Collembola Sminthuridae	83B PF52		.6	white						
Acari	83B PF24	[illegible]-42 5-49 C-26 A-15								
Siphonaptera Pulicidae	83B PF37		2	b[illegible]	n[illegible]	pronotal comb	ab[illegible] 2-7 [illegible] 1 b[illegible]			
[illegible]	83B PF8		[illegible]							

C.11.3.1-22a

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number site B
Sampling technique pitfall

Species List Reference No. 83 B P
Taxonomic Information Homoptera
Identifier S Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Coccoidea	83B PF17	A-50 C-31 D-29 S-16	2.5	brown oval	[illegible] only					
Cercopidae immature	83B PF17	"		brown				yellow		
Cicadellidae	83B PF17	"	6	brown patterned						
CICADELLIDAE	83B PF 17	"	2.7	WHITE W/RED [illegible]	EYES RED					
APHIDIDAE	83B PF 17	"	1.5	GRN.			PAIR OF CORNICLES		WINGLESS	

FLOOD PROGRESS REPORT

C.11.3.1-22

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
[illegible]	[illegible]B PF17		2	tan						

C.11.3.1-23

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RECEIVED [illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number RIO BLANCO 83
Site name and number SITE 13
Sampling technique PITFALL

Species List Reference No. 83 B P
Taxonomic Information PSEUDOSCORPIONIDA, HEMIPTERA, THYSANURA
Identifier DENISE KOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
PSEUDOS-CHTHONIIDAE	83B PF57	L-19	1.2	YELLOW						
HEMIPTERA [illegible] TINGIDAE	83B PF59	H-7 [illegible]-7 [illegible]-4 5-15	2.1	BLACK				YELLOW	LACY	
THYSANURA MACHILIDAE	83B PF61		4.5	LT. BROWN	[illegible]					

C.11.3.1-24

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number site B

Sampling technique pitfall

Species List Reference No. 83B PF

Taxonomic Information LEPIDOPTERA

Identifier S. Taylor

[illegible] PROGRESS REPORT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
larvae Noctuidae	83 B PF 56	D-7 5-57 2-8	14	tan w/ stripe	broad white dorsally mottled brown					
larvae Noctuidae	83B PF 56	〃	25	tan w/ stripe	broad white dorsally head with same stripe					
larvae Noctuidae	83B PF56	〃								

C.11.3 1-250

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco
Site name and number site 3
Sampling technique pitfall
Species List Reference No. 83B PF
Taxonomic Information Coleoptera
Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Chrysomelidae	83B PF4	[illegible]	2	blk. shiny				enlarged hind femur	punc. in rows	
Chrysomelidae	83B PF9		2	blk. shiny				enlarged hind femur	punctate (irregularly)	
Tenebrionidae 3	83B PF5	[illegible]	7	dk. brown slightly punctate	eyes divided			spiny		
Tenebrionidae 1	83B PF10		16	blk.	[illegible] round				elytra [illegible] rough	
Tenebrionidae 1	83B PF11		16	blk.					[illegible]	
Tenebrionidae 1	83B PF23		16	blk. [illegible]					punc (rough) irregular	similar to P[illegible] [illegible]

NDCSP PROGRESS REPORT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Scydmaenidae ?	83B PF36		3	red-brn ant-like		punc., coarse pubescence		femora clavate	punc. in rows coarse pubescence	
2 ~~[illegible]~~ Ostomidae 1	83B PF40	83C PF9		red-brown	[illegible] clubbed		[illegible] exposed	spiny		
Scarabaeidae 1	83B PF31	C-10	15	red-brn,						
Elateridae	83B PF12	C-15 [illegible]	9			prothorax convex			punc. in rows	
Elateridae	83B PF26	[illegible]	5	brown					striated longitudinally	
Staphylinidae 3	83B PF29		3	brown	[illegible] lighter			tarsi lighter		
Staphylinidae [illegible]	83B PF30		3	blk/ brown	blk. and [illegible] [illegible]	brown	blk	[illegible]		
Staphylinidae 1	83B PF32		3	brown			[illegible] [illegible] band			

C.11.3.1-26

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 [illegible]

Site name and number [illegible] P.

Sampling technique [illegible]

Species List Reference No. 83 PPF

Taxonomic Information Col[illegible]

Identifier [illegible]

[illegible] REPORT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
 Scolytidae	83P PF47		4	[illegible] blk	[illegible] [illegible]	[illegible]	[illegible]	b[illegible]		
Scarabaeidae	83B 1F50	C-1[illegible]	9	[illegible]			[illegible]			
SCARABAEIDAE	83E F60		13	BLK [illegible]				FRONT LEGS LARGE ([illegible] UPPER [illegible])	STRIPED	ANT. LAMELLATE & SMALL

C.11.3.1-27

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number RIO BLANCO 83
Site name and number SITE B
Sampling technique PITFALL

Species List Reference No. 83 B PF
Taxonomic Information COLEOPTERA

Identifier D. ROSCHEN

[illegible] REPORT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ ELATERIDAE	83 B PF 62		14	BLACK		V BETWEEN PRO- + MESO- THORAX			STRIATED LONG,	

C.11.3.1-28

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number [illegible]

Site name and number site B

Sampling technique pitfall

Species List Reference No. 83B P

Taxonomic Information Diptera

Identifier S Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Anthomyiidae	83B PF21	A-39	5	bl.						
Cecidomyiidae	83B PF42		1.5	brown						
PHORIDAE	83B PF58	A-38	1.2	BRN.						

C.11.3.1-29a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number site B

Sampling technique pitfall

Species List Reference No. 83 B P

Taxonomic Information Hymenoptera

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Formicidae	83 B PF6		2	brown			1 seg. petiole [illegible] truncate			
Formicidae	83 B PF13		4-5	orange			darker-brownish 2 seg. petiole			
Formicidae	83 B PF14		1.5	dk brown			2 seg. petiole			
Formicidae	83 B PF33		6-7	dk. brown			dk brown/white 1 seg. petiole			
Formicidae	83 B PF43		3	brown			[illegible] petiole			
Formicidae	83 B PF44		2	[illegible]			[illegible]			
Formicidae	PF [illegible]		2							

C.11.3.1

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs : [illegible]	Wing	Other
FORMICIDAE	93B PF63		10	DK. BROWN					X	
Sciaridae	93B PF48		.8	blk.						
Sphecidae	93B PF51		13	blk.	wt. blk./yellow		blk. [illegible]			

C.11.3.1-30
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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site B
Sampling technique Pitfall
Species List Reference No. 83B PF
Taxonomic Information Arachnida
Identifier C. Haynes

FROM PROGRESS REPORT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Thomisidae	83B PF72									

C.11.3.1-3k

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number site B

Sampling technique pitfalls

Species List Reference No. 83B P

Taxonomic Information Arachnida

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Salticidae	83B PF19	[illegible]	4.5	brown w/outer white pubescence	white fringe of hair at dorsal anterior margin					
Salticidae	83B PF20	[illegible]	2	blk. shiny						
Gnaphosidae	83B PF35	[illegible]		light tan						
Gnaphosidae	83B PF4_	[illegible]	11	[illegible]	on	[illegible]	grey/[illegible]	brown, spiny		
Theridiidae All	83B PF46	2-42	1.8	[illegible]	tan		[illegible]			
Lycosidae	83B PF54	[illegible] 5-54 A-14	7	brown						
Gnaphosidae	[illegible]	[illegible]		[illegible]						

C.11.3.1-31b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Gnaphosidae	83B PF56	[illegible] 13-25, 33-[illegible]								
Gnaphosidae	83B PF57	[illegible] 13-25, 33, [illegible]								
Amaurobidae	83B PF66		1.5	pale	eyes · 2 rows homogenous lite rd brn.		white w/ lite black markings w/ cribellum distinct	w/ calamistrum		
unknown spider	83B PF67									
Clubionidae	83B PF68									
Solpugida	83B PF69									
Acari	83B PF70									
Theridiidae	83B PF71									

C.11.3.1-32

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number SITE C

Sampling technique PITFALL

Species List Reference No. 83 C P.

Taxonomic Information COLLEMBOLA

Identifier D. Bos[illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
UNKNOWN	83 C PF 1		.6	WHITE						
ENTOMOBRYIDAE	83 C PF 2	[illegible]	1.4	WHITE W/ DK PURPLE MARKINGS						
IMMATURE COLLEMBOLA FAMILY UNKNOWN) [illegible]	83 C		.4	WHITE W/PURPLE ANTENNAE						
ISOTOMIDAE	83 C PF14	[illegible]	.8	PURPLE						
ENTOMOBRYIDAE	83 C PF 17	[illegible]	1.5	WHITE W/LT. [illegible]						
ENTOMOBRYIDAE	83 C PF 18	[illegible]	1	LT. PURPLE						
SMINTHURIDAE	83 C PF 21		.6	[illegible]						

C.11.3.1-32b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
SMINTHURIDAE	83C FF22	E-41 D-40	1	Lt. PURPLE						
Sminthuridae	83C- FF32	D-41 E-42	.7	yellow [illegible] white [illegible]						
Isotomidae	83C FF33		.9	white						

C.11.3.1-33

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number SITE C

Sampling technique PITFALL

Species List Reference No. 83 C PF

Taxonomic Information Homoptera

Identifier D. Bouchard

[illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
CICADELLIDAE	83 C PF 31	A-50 B-17 D-09 5-16	2.7	BRN.						

C. 11.3 - 34a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE C

Sampling technique PITFALL

Species List Reference No. 83 C PF

Taxonomic Information HEMIPTERA, LEPIDOPTERA PSEUDOSCORPIONIDA

Identifier D. BOSCHERT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
IMMATURE HEMIPTERAN	83 C PF 7	A-7 B-59 D-4 S-15	.8-1	YELLOW W/BROWN HEAD				BROWN		SUCKING MOUTHPARTS
ACARI	PF36	[illegible] [illegible] S-49 A-15								
LEPIDOPTERA LARVAE Noctuidae	83 C PF 8	D-7 B-56 S-57	10	BROWN	BROWN STRIPES					

C.11.3.1-3

[illegible] REPORT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
~~[illegible]~~ ~~[illegible]~~ Chelonethida	[illegible] C PF17	B-57	2.6	Brown						
Gnaphosidae	37	[illegible]								
Araneida unknown	38									
Salticidae	39	[illegible]								
Agelenidae	41									
Theridiidae	42	B-40								
order Solpugida	40									

C.11.3.1-35a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO
Site name and number SITE C
Sampling technique PITFALL

Species List Reference No. 83 C PF
Taxonomic Information COLEOPTERA
Identifier [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
CURCULIONIDAE ✓	83 C PF 2		3.7	ELYTRA [illegible] HEAD [illegible]	SHORT SNOUT					ANT. CLUBBED + ELBOWED
✓ OSTOMIDAE SS	83 C PF 9	B-41	4.5-5	RED-BRN						CLUBBED ANT.
✓ SCARABAEIDAE	83 C PF10	B-31	13	RED/BROWN	RIDGE		STRIATED LONG.			ANT. LAM.
TENEBRIONIDAE 1	83 C PF 11		16	BLK.						ANT. NOT CLUBBED
SCARABAEIDAE	83 C PF12	B-30	4	ORANGE			STRIATED [illegible]			ANT. LAM.
ELATERIDAE	83 C PF15	[illegible]	7	BLACK				LOWER HALF ORANGE		
CHRYSOMELIDAE	83 C PF16		6.6	MET[illegible]		TAN	[illegible]	[illegible]		

C.11.3.1-35b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
CHRYSOMELIDAE	83 C PF 24	B-9	2.9	BLK.						
OSTOMIDAE	83 C PF27		3.5	ORANGE						
CURCULIONIDAE	83 C PF28		5.5	BLACK				RED		
CHRYSOMELIDAE	83 C PF29	B-4	2	BRN.						
LARVAE	83 C PF 34		26	BRN						
SCARABAEIDAE	83 C PF 35	5-31	2.9	RED-BRN						

C.11.3.1-36a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 82 RIO BLANCO

Site name and number SITE C

Sampling technique PITFALL

Species List Reference No. 83 C PF

Taxonomic Information HYMENOPTERA

Identifier D. BOSQUET

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
FORMICIDAE	83 C PF 4		4	ORANGE			2 SEG PETIOLE DK. BROWN			
FORMICIDAE	83 C PF 5		2	LT. BROWN			2 SEG. PETIOLE			
FORMICIDAE	83 C PF 6		1.3	ORANGE			2 SEG. PETIOLE			
FORMICIDAE	83 C PF 13		2.5	DK BROWN			1 SEG. PETIOLE			
FORMICIDAE	83 C PF 20		4	LT. BROWN			2 SEG. PETIOLE DK BROWN			
FORMICIDAE	83 C PF 22		10-13	[illegible] ABF.			1 SEG. PETIOLE			
FORMICIDAE	83 C PF 2[illegible]		3.8	[illegible]			1 [illegible]			

C.11.3.1-366

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
FORMICIDAE	83C PF26		8	DK. ORANGE W/BLK HEAD + MED.			1 SEG. PETIOLE (BLACK) BLACK STRIPE DOWN BACK			
FORMICIDAE	83C PF30		12	BLK.			1 SEG. PETIOLE		HAS WINGS	

C.11.3.1-37

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number Site C

Sampling technique Pitfall

Species List Reference No. 83 C PF

Taxonomic Information Arachnida

Identifier C. Haynes

[illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Lycosidae	83C PF43									
Thomisidae	83C PF 44									
Pisuridae	83C PF 45									

C.11.3.1-380

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83-02 RIO BLANCO
Site name and number SITE D
Sampling technique PITFALL

Species List Reference No. 83 D - PF
Taxonomic Information COLEOPTERA
Identifier D. [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
STAPHYLINIDAE 4	83 D PF 6		1.9-2.4	DK. BROWN						
TENEBRIONIDAE 3	83 D PF 15	H-48	14-16	BLK				5-5-4		NO CLUB
[illegible]	83 D PF 16	H-43	12	GRAY W/BLK STRIPES			PUBESCENT			
CARABIDAE 1	83 D PF 17		15	BLK						
[illegible]	83 D PF 18		8.3	GRAY			PUBESCENT			
CURCULIONIDAE	83 D PF 19		3							
CUR[illegible]	[illegible]		1	[illegible]			PUBESCENT			

C.11.3.1-38

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
SCARABAEIDAE 2	E3D F26		6.2	ORANGE						LAM. ANT
TENEBRIONIDAE 10	E3D PF28	[illegible]	6.5	DK. BROWN		PRO-THORAX [illegible] AS [illegible] ELYTRA				
CARABIDAE LARVAE 1	E3D PF31		2.5	DK. BRN.						
COCCINELLIDAE 1	E3D PF36		2.3	DK. BRN.						
ELATERIDAE 1	E3D PF37	[illegible]	4.5	BRN.						
STAPHYLINIDAE 1	E3D F43		4	DK. BRN.						
unknown larvae 3	E3D PF54									

C.11.3.1-39

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83-02

Site name and number Site D Upland sage

Sampling technique Pitfall grid

Species List Reference No. ~~67~~ 83 D - PF

Taxonomic Information Collembola

Identifier BELL

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Isotomidae	83D PF1	[illegible]	.5-1.0	purple to grey	ant thick, short	prothorax not visible from above	4th seg about as long as 3rd furcula small			
ENTOMOBRYIDAE	83D PF2	[illegible] 5-11	1.2	LT. PURPLE						
ISOTOMIDAE	83D PF3		2	LT. PURPLE						
SMINTHURIDAE	83D PF40	[illegible]	1.4	LT PURPLE						
SMINTHURIDAE	83D- PF4	[illegible]	1.3	LT [illegible]						

C.11.3.1-40

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83-02 RIO BLANCO

Site name and number SITE D

Sampling technique PITFALL

Species List Reference No. 83 D - PF

Taxonomic Information HEMIPTERA

Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
IMMATURE HEMIPTERAN	83D PF 4	A-7 B-13 C-7 5-15	.8	YELLOW W/BROWN [illegible]						
HEMIPTERAN NYMPH	83D PF 4	"	1.5	BRN.						
NYMPH	83D PF 4	"	1.2	YELLOW W/RED STRIPES						
MIRIDAE	83D PF 4	"	2	BROWN W/[illegible]			REDDISH [illegible] SPOT AT TOP			ANT LIKE
LYGAEIDAE	83D PF 4	"	4.8	BLK				RED		
TINGIDAE	83D PF 4	"	2.8	DK. BRN					LACY	
NYMPH	83D PF 4	"	3	BRN	[illegible]					

C.11.3.1-41

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[illegible] PROGRESS REPORT

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83-02 RIO BLANCO
Site name and number SITE D
Sampling technique PITFALL

Species List Reference No. 83 D - PF
Taxonomic Information HOMOPTERA
Identifier D. FOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
CICADELLIDAE	83 D PF 29	A-50 6-17 C-31 5-16	3.2		BRN. MARKINGS		DK. BRN STRIPES ≋			
CICADELLIDAE	83 D PF 29	"	1.5	YELLOW			LT. BRN. STRIPES			
CICADELLIDAE	83 D PF 29	"	6	LT. BRN. DK. BRN SPOTS						

C.11.3.1-42

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83-02 RIO BLANCO

Site name and number SITE D

Sampling technique PITFALL

Species List Reference No. 83 D-PF

Taxonomic Information ORTHOPTERA

Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ACRIDIDAE	83 D PF 20	A-11 S-4 D-34 D-35	6	PINK W/DK.[illegible] STRIPES [illegible]						
ACRIDIDAE	83 D PF 34	A-11 S-8 D-28 D-35	20	BROWN W/DK [illegible] [illegible]					+	
ACRIDIDAE	83 D PF 35	A-11 S-8 D-28 D-34	18	BRN. W/BRN MARKINGS						
GRYLLACRIDIDAE	83 D PF 45		23	YELLOW [illegible]	LONG [illegible]			WELL [illegible] HIND		
GRYLLACRIDIDAE	83 D PF 47	A-55 S-7	9.5	YELLOW W/BRN RED						

C.11.3.1-43a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83-02 Rio Blanco

Site name and number SITE D

Sampling technique PITFALL

Species List Reference No. 83 D-PF

Taxonomic Information LEPIDOPTERA

Identifier D. Boschini, CMH

[illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
LEP[illegible] LARVAE Noctuidae	83 D PF 7	[illegible] 5-59 C-8	5.7	BRN						
ACARI	D 48	H-24 5-49 [illegible]-36 [illegible]-5								
ARANEIDA Thomisidae	49	H 45								
Araneida unknown	50									
Salticidae	51									

C.11.3.1-43

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Gnaphosidae	53> ?F 52	S-53 [illegible]								
Lycosidae	53	S-55 H-14 B-54								
Oxiopidae	55									
Dictynidae	56									
Solpugida	57									
Clubionidae	58									
Agelenidae	59									
Theridiidae	60									

C. 11.3.1-44a

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[illegible] REPORT

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83-02 RIO BLANCO

Site name and number SITE D

Sampling technique PITFALL

Species List Reference No. 83D-PF

Taxonomic Information HYMENOPTERA

Identifier D. ROSENFELD

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
FORMICIDAE	83D PF 8		4.9-5.8	ORANGE W/BLK HEAD			1 SEG. PETIOLE			
FORMICIDAE	83D PF 9		4	ORANGE W/BRN. HEAD & ABD			2 SEG. PETIOLE SMOOTH			
FORMICIDAE	83D PF 10		3	TAN			1 SEG. PETIOLE			
FORMICIDAE	83D PF 11		1.2	ORANGE			2 SEG. PETIOLE			
FORMICIDAE	83D PF 12		2.5	BRN			2 SEG. PETIOLE THIN			
FORMICIDAE	83D PF 13		2.5	BRN			1 SEG. PETIOLE ([illegible])			
FORMICIDAE	83D PF 14		[illegible]	[illegible]			[illegible] ROUGH			

C.11.3.1-445

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
FORMICIDAE	33 D PF 21		13	ORANGE W/BLK HEAD + ABD.			1 SEG. PETIOLE			
FORMICIDAE	33 D PF 22		4	ORANGE W/ BRN HEAD + ABD.			2 SEG. PETIOLE END OF ABD. LIGHTER			
FORMICIDAE	33 D PF 23		2.6–3.1	DK. BRN.			1 SEG. PETIOLE			
FORMICIDAE	53 D PF 24		1.3	DK. BRN			2 SEG. PETIOLE SMOOTH			
[illegible]	33 D PF 33		1.8	DK. BRN	ANT. STR[illegible]					NO PETIOLE (AS [illegible])
[illegible] WINGED WASPS	33 D PF 39		1.[illegible]							

C.11.3.1-45

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83-02 Rio Blanco

Site name and number Site D

Sampling technique Pitfall

Species List Reference No. 83D-PF

Taxonomic Information Araneidae cont.

Identifier C. Haynes

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Pholcidae	61									

C.11.3.1-46a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number SITE 5

Sampling technique PITFALL

Species List Reference No. 835. PF

Taxonomic Information COLLEMBOLA, THYSANURA

Identifier D. Boschen

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ENTOMOBRYIDAE	835 PF 10		1.5	[illegible] PURPLE w/ WHITE MARKINGS						
ENTOMOBRYIDAE	835 PF 11	[illegible]	1	LT. PURPLE						
ISOTOMIDAE	835 PF 12		1.6	PURPLE	LONG ANT					
ISOTOMIDAE	835 PF 13		1.5	yellow [illegible]	LONG ANT					
ISOTOMIDAE	835 PF 24	[illegible]	1.3	PURPLE	SHORT ANT					
✓ ENTOMOBRYIDAE	835 PF 31	[illegible]	1.7	yellow w/ [illegible] [illegible]						
UNKNOWN	835 PF [illegible]		.5	[illegible]	[illegible]					

C.11.3.1-46b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
THYSANURA MACHILIDAE	835 PF 14	B-15 A-9 B-61	2	ORANGE	EYES CONTIGUOUS co		STYLI			

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.1-47

ECI ecology consultants, inc.

Project name and number 83 RIO BLANCO

Site name and number SITE 5

Sampling technique PITFALL

Species List Reference No. 835 · PF

Taxonomic Information HOMOPTERA

Identifier D. BOSCHERT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
CICADELLIDAE	835 PF 16	A-50 B-17 C-31 D-29	2.9	BRN W/DK BRN MARKINGS						
CICADELLIDAE	835 PF 16	"	3.6	BRN W/DK BRN SPECKLES					NONE	
DELPHACIDAE	835 PF 16	"	2.8	BROWN W/WHITE [illegible]				SPUR ON HIND TIBIAE		
CICADELLIDAE	835 PF 16	"	1.5	WHITE					NONE	
CICADELLIDAE	835 PF 16	"	[illegible]	BRN						

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.1 -48

ECI
ecology consultants, Inc.

Project name and number 83 Rio Blanco

Site name and number SITE I

Sampling technique PITFALL

Species List Reference No. 835 PF

Taxonomic Information HEMIPTERA

Identifier D. Bosquen

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
IMMATURE HEMIPTERA	835 FF15	A-1 B-59 C-7 D-4								
ADULT HEMIPTERA	835 PF15	"								

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.1-49 a ECI
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Project name and number 83 Rio Blanco
Site name and number SITE 5
Sampling technique PITFALL

Species List Reference No. 835 - PF
Taxonomic Information ORTHOPTERA
COLEOP-
Identifier D. [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
GRYLLACRIDIDAE	835 PF 7	A-55 D-47	12	YELLOW WITH BRN MARKINGS						
ACRIDIDAE	835 PF 8	A-11 D-20 I-34 [illegible]-35	12	RED SPECKLED W/BRN						
Nymphalidae	PF60									
LEPIDOPT. ~~Arctiidae~~ Lasiocampidae	62									
ACARI	5 49	[illegible] D-48 [illegible] [illegible]								
unknown Spider	50									
PHALANGIDA	51	[illegible]								

C.11.3.1-19b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
unknown COLEOP larvae	52									
Gnaphosidae	53	D-[illegible] C-37 A-22,37, 40,53, 56 E-35,40 55,56, 57					Geometridae 61			
Lycosidae	54	D-53 A-14 B-54								
Salticidae	55	[illegible] D-51								
Lepidopt Pyralidoidea	56	A-12 A-13								
Lepidopt Noctuidae	57	D-7 B-56 C-8								
Hahniidae	58	A-23								
Arctiidae	59									

C.11.3.1-50a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number [illegible]
Site name and number SITE 5
Sampling technique PITFALL

Species List Reference No. 835 PF
Taxonomic Information COLEOPTERA
Identifier D. [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ [illegible] 1	835 PF 9		3.8	GRAY w/BRN MARKS			STRIATE [illegible]			
✓ CARABIDAE 8X	835 PF 19	[illegible]	23	DK BROWN			1ST DIVIDED BY COXAE			
✓ TENEBRIONIDAE 7X	835 PF 2[illegible]		10.5	DK. BRN.						
CURCULIONIDAE 1	835 PF 21		3.5	RED w/BRN MARKS						
[illegible] 1	835 PF [illegible]		2.2	LT. BRN.						
[illegible]IDAE 2	835 PF [illegible]		6.5	GOLD w/DK BROWN	MOUTHPARTS [illegible]			[illegible]		
TENEBRIONIDAE 1	[illegible] PF 27	[illegible]	4	[illegible]						

C.11.3.1-4
50

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
CURCULIONIDAE	83 5 PF28		5.5	RED						
SCARABAEIDAE	83 5 PF29	A-34	11	DK. RED						
SCARABAEIDAE	83 5 PF34		8.2	DK RED			STRIATED LONG.	WELL-DEVELOPED		
TENEBRIONIDAE ?	83 5 PF37		5.8	RED						
STAPHY- LINIDAE	83 5 PF38		2.8	DK. BRN.						
SCARABAEIDAE	83 5 PF 39	2-35	3.5	ORANGE FLECKED W/WHITE			STRIATED LONG.			
[illegible] 2	83 [illegible] PF46	[illegible]	7.8	DK. RED						
[illegible] 1	83 5 PF43	[illegible]	3.4	[illegible]			[illegible]			

C.11.3.1-51

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE 5

Sampling technique PITFALL

Species List Reference No. 835 - PF

Taxonomic Information COLEOPTERA

Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ELATÉRIDAE -1	835 PF 46		12	BLK						
CURCULIONIDAE -	835 PF47		4.5	BLK						
CURCULIONIDAE -	835 PF 48		2.7	RED/W BRONZE PRO-THORAX						
CURCULIONIDAE -	835 PF [illegible]		3.5	LT. GRY W/ BRN [illegible]						

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.1-52a

ECI
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Project name and number 83 RIO [illegible]
Site name and number SITE [illegible]
Sampling technique PITFALL
Species List Reference No. 835 PF
Taxonomic Information HYMENOPTERA
Identifier D. [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
FORMICIDAE	835 PF 1		3.4	ORANGE W/BRN HEAD + ABD.			SHORT + ROUNDED (BRN) 2 SEG PETIOLE			
FORMICIDAE	835 PF 2		3.5-4.5	ORANGE W/BRN HEAD + ABD.			LONG ABD. 2 SEG PETIOLE			
FORMICIDAE	835 PF 3		4.4	ORANGE W/BRN HEAD + ABD.			1 SEG PETIOLE			
FORMICIDAE	835 PF 4		4.1	BRN.	VERY [illegible] (BL[illegible])		2 SEG. PETIOLE			
FORMICIDAE	835 PF 5		2.8	TAN			1 SEG PETIOLE			
FORMICIDAE	835 PF 6		2.5	BRN			1 SEG. PETIOLE			
FORMICIDAE	835 PF 7		7	ORANGE W/BRN [illegible]			1 SEG [illegible]			

C.11.3.1-5

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
FORMICIDAE	835 PF18		5-6	DK. BROWN			1 SEG. PETIOLE			
FORMICIDAE	835 PF25		2	BROWN			1 SEG. PETIOLE			
FORMICIDAE	835 PF35		6.4	ORANGE w/BLK HEAD & [illegible]			1 SEG. PETIOLE			
FORMICIDAE	835 PF 4[illegible]		4.3	BRN			1 SEG. PETIOLE 5.			
FORMICIDAE	835 PF41		5.2	DK BRN			1 SEG PETIOLE			
FORMICIDAE	835 PF45		10.6	DK. BRN			1 SEG. PETIOLE		+	

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.1-53

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[illegible]

Project name and number 83 Rio Blanco

Site name and number Site 5

Sampling technique Pitfall

Species List Reference No. 83 S-PF

Taxonomic Information Araneidae cont

Identifier C. Haynes

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Ageleniidae	64									
Dictyniidae	65									
Araneiidae	66									

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number 83 RIO BLANCO Site Name & Number SITE A

Collection Date JUNE '75 Species List Ref. No. 83A LD

Sampling Means LITTER DVAC Sorting Means HAND

LITTER DRY WT (GM).

Sample Number

	Species Reference Number	174 #132	170 #133	220 #134	585 #135	595 #136	6	7	8	9	10	Total
x	1		4	1	3							
x	2		4									
x	3		2									
x	4		1									
x	5		1									
x	6		2									
x	7		1									
x	8		1									
x	9			1								
x	10	nothing			3	2						
x	11				1	2						
x	12				1							
x	13					1						
x	14					1						
x	15					1						
x	16		3									
x	17		1									
x	18			2								
x	19				6	4						
x	20					7						
	21											
	22											
	23											
	24											
	25											
	26											
	27											
	28											
	29											
	30											
	31											
	32											
	33											
	34											
	35											
	36											
	37											
	38											
	39											
	40											
	Total	0	20	4	14	18						

[illegible]

C.11.3.2-2

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number 83 Rio Blanco Site Name & Number SITE B 2

Collection Date JUNE '25 Species List Ref. No. 83 B LD

Sampling Means LITTER DVAC Sorting Means ~~HAND~~ BERLESE

LITTER DRY WT. (gm)

Species Reference Number	#127	#128	#129	#130	#131	6	7	8	9	10	Total
LITTER DRY WT. (gm)	499	398	486	388	236						
x 1			1								
x 2				1							
x 3					1						
4											
5											
6	NOTHING	NOTHING									
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
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29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
	0	0	1	1	1						

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3

LAB ANALYSIS - INVERTEBRATES

Project Name & Number 73- Rio Blanco

Site Name & Number SITE 8

Collection Date June '75

Species List Ref. No. 8- C L D

Sampling Means LITTER DVAC

Sorting Means HAND PICK

< DRY WT (gm)

Species Reference Number	688 #122	554 #123	421 #124	326 #125	274 #126	6 #152 Berlese calib	7	8	9	10	Total
1	1										
2	2										
3	1										
4	1										
5				1							
6					1						
7	2				1						
8	1										
9	1										
10	1										
11											
12											
13											
14		Nothing	Nothing								
15											
16											
17											
18											
19											
20											
21						Lost in lab - like nothing					
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
	10	0	0	1	2						

C.11.3.2-9

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LAB ANALYSIS - INVERTEBRATES

4

Project Name & Number 83 RIO BLANCO Site Name & Number SITE D

Collection Date JUNE Species List Ref. No. 8: D L O

Sampling Means LITTER DVAC Sorting Means HAND

LITTER DRY WT (GM) 131 215 173 124 314

	Species Reference Number	Sample Number ~~1~~ 87	~~2~~ 88	~~3~~ 89	~~4~~ 90	~~5~~ 157	~~6~~	REPLACE COLLECTION 7 FROM 68	8	9	10	Total
x	1	20										
x	2	4			96							
x	3	4										
x	4	2										
x	5	3	3	74	1							
x	6	1				2						
x	7	1										
x	8	1			1							
x	9	1										
x	10		1					NOTHING				
x	11		1		1	1						
x	12			2								
	x 13			49								
x	14			1								
x	15				64							
x	16				1							
x	17				1	1						
x	18				1							
x	19					1						
x	x 20					1						
x	21	6	4		6	3						
x	22	1	1									
x	23	1				1						
x	24		1									
x	25			1	2							
x	26			1								
x	27				1	1						
x	28				1							
x	29				1							
	30											
	31											
	32											
	33											
	34											
	35											
	36											
	37											
	38											
	39											
	40											
		45	11	128	177	11						

[illegible] THIS REPORT

C.11.3.2-5

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number 83 RIO BLANCO Site Name & Number SITE 5

Collection Date MAY-JUNE '75 Species List Ref. No. 83 5 LD

Sampling Means LITTER DIAG Sorting Means HAND

LITTER DRY WT (gm)

	Species Reference Number	342 ~~1~~ 76	423 2 77	254 ~~3~~ 50	292 ~~4~~ 155	322 ~~5~~ 156	Sample Number ~~6~~	Berlese recalibration from 76	8	9	10	Total
x	1	2										
x	2	3	1		1	9						
x	3	1		1	2							
x	4	4	1		2	1						
x	5	1										
x	6	12	2									
x	7	7			18	8						
x	8	1			1	1		Nothing				
x	9		1									
x	10		1	1	2	6						
x	11		1									
	12		1	1		1						
x	13			1								
x	14			1								
x	15			1								
x	16			1								
x	17				12							
x	18				26	11						
x	19				1							
x	20				1							
x	21					2						
x	22					1						
x	23	7			1	3						
x	24	2	2		7	15						
x	25	2		1	3	2						
x	26		1									
	27		[illegible]	1								
	28											
	29											
	30											
	31											
	32											
	33											
	34											
	35											
	36											
	37											
	38											
	39											
	40											
		42	11	9	77	60						

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.2-6a

ECI ecology consultants, inc.

Project name and number 83 RIO BLANCO

Site name and number SITE A

Sampling technique LITTER DIAG

Species List Reference No. 83 A LD

Taxonomic Information COLEOPTERA

Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ANTHICIDAE	83 A LD 2		3.9	ORANGE W/BRN ON ABD			HORNLIKE PROCESS EXTENDS FROM PRONOTUM OVER HEAD			
CURCULIONIDAE	83 A LD 3		7.5	BROWN RED			PUNCTATE + PUBESCENT			
CHRYSOMELIDAE	83 A LD 5		2.2	METALLIC DK. GREEN						
STAPHYLINIDAE	83 A LD 7		3.3	BRN						
UNKNOWN (ANT. BROKEN OFF)	83 A LD 8		1.7	ORANGE						
CARABIDAE	83 A LD 10		5	DK. RED				ORANGE		
[illegible]	83 A LD 11		7	[illegible]						

C.11.3:2-66

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
✓ STAPHYLINIDAE	83A LD12		3.4	BLK.						
✓ CARABIDAE	83A LD14		10.3	DK. RED				ORANGE		
MELANDRYIDAE	83A LD15		3.5	ORANGE			2 DOTS ON PRONOTUM			
Carabidae larvae	20									

C.11.3.2-7a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE A

Sampling technique LITTER DYNC

Species List Reference No. 83A LD

Taxonomic Information HYMENOPTERA

Identifier D. Br[illegible]HEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
[illegible] WASPS	83A LD1									
FORMICIDAE	83A LD13		2.2	BRN			1 SEG. PETIOLE			

C. 11.3.2-8a

ecology consultants, inc.

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE A

Sampling technique LITTER [illegible]

Species List Reference No. 83 A LD

Taxonomic Information THYSANOPTERA, HOMOPTERA, HEMIPTERA ARANEIDA

Identifier D. [illegible] REK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
THYSANOPTERA	[illegible] LD 5	T-13	1.6	BRN						
HOMOPTERA	83 A LD 6	D-11 S-10 C-2								
HEMIPTERA	83 A LD 7	D-[illegible] [illegible]								

C.11:3.2-8b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
ARANEIDA Gnaphosidae	83A LD 16	5-25								
PHALANGIDA	17									
Dictynidae	19	D-27								
LEPIDOPTERA Noctuidae	18									

C.11.3.2-95

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO
Site name and number SITE B
Sampling technique LITTER DVAC
Species List Reference No. 83B LD
Taxonomic Information HYMENOPTERA
Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
FORMICIDAE	83 B LD 1		2	ORANGE			2 SEG PETIOLE			
FORMICIDAE	83 B LD 2		2	BRN			1 SEG PETIOLE			
FORMICIDAE	83 B LD 3		3.7	ORANGE W/BRN HC + MED			2 SEG PETIOLE			

C.11.3.2-10

ECI
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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 · [illegible]

Site name and number SITE C

Sampling technique LITTER D-VAC

Species List Reference No. 83 C LD

Taxonomic Information HYMENOPTERA

Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
FORMICIDAE	83C LD 1		3.7	BRN/ DK GRN			1 SEG. PETIOLE			
FORMICIDAE	83C LD 2		1.8	LT. ORANG			2 SEG PETIOLE			
ARANEIDA unknown	83C LD8									
Diptera unknown larvae	LD9									

C.11.3.2-11

ECI

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 82 RIO BLANCO

Site name and number SITE C

Sampling technique LITTER BAG

Species List Reference No. 83 C LD

Taxonomic Information COLEOPTERA

Identifier J.L. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ STIP-[illegible]	83C LD4		1.8	BRN						
✓ CURCULIONIDAE	83C LD5		6	GRAY/ MOTTLED BRN			PUBESCENT			
✓ CURCULIONIDAE	83C LD6		5.3	BRN						
Carabidae larvae	LD7									
unknown	LD10									

C.11.3.2-12

ECI

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio P[illegible]

Site name and number SITE C

Sampling technique LITTER [illegible]

Species List Reference No. 83 C LD

Taxonomic Information HOMOPTERA

Identifier D. [illegible]

[illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
HOMOPTERA	83 C LD 3	5-10 A-6 D-11								

C.11.3.2-13a

ECI

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE D

Sampling technique LITTER DYAC

Species List Reference No. 83 D LD

Taxonomic Information CHILÓPODA

ARANEIDA, LEPIDOPTERA

Identifier D. ROSENFEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ECCHILONCNA	83 L LD10	5-1	14	YELLOW w/ORANGE HEAD						
Acari	21	5-24								
Salticidae	22									
Thomisidae	25									
ARANEIDA ~~Salticidae~~ Unknown	26									
Dictynidae	27	A-19								

[illegible] C.11.3.2-13b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Noctuidae LEPIDOPTERA larvae	23									
Lep Larvae unknown	33D LD 24									
Pyralidsidea	28									
Hesperidae Larvae	29									

C.11.3.2-17a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE D

Sampling technique LITTER DVAC

Species List Reference No. 83 D LD

Taxonomic Information HYMENOPTERA

Identifier P. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
FORMICIDAE	83 D LD 1		1.4	ORANGE	SMALL EYE		2 SEG. PETIOLE			
FORMICIDAE	83 D LD 2		2.1	BRN.			1 SEG PETIOLE			
FORMICIDAE	83 D LD 3		3.7	ORANGE W/BRN HEAD & ABD			2 SEG PETIOLE			
FORMICIDAE	83 D LD 4		2.5	BRN			2 SEG PETIOLE			
FORMICIDAE	83 D -D5		2	DK. ORANGE W/ [illegible]			2 SEG. PETIOLE			
FORMICIDAE	83 D LD 12		3.8	DK. BRN			1 SEG. [illegible]			
FORMICIDAE	83 D -L16.		5	ORANGE [illegible]			1 [illegible]			

C.11:3.2-14

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
DRYINIDAE	83D LD9		1.2	ORANGE W/BRN HEAD+ ABD						
UNKNOWN PUPAE	83D LD5		1.5	WHITE						
WINGED WASP	83D LD11		2	BRN						

C.11.3.2-15

ECI

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE F

Sampling technique LITTER [illegible]

Species List Reference No. 83 D LD

Taxonomic Information COLLEMBOLA

Identifier D. [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ISOTOMIDAE	83 D PF 15		.8- 1	PURPLE						
ENTOMOBRYIDAE	83 F PF20	5-18	1.4	PURPLE						

C.11.3.2-16

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TERRESTRIAL INVFRTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO
Site name and number SITE D
Sampling technique LITTER DUMP
Species List Reference No. 83 D LD
Taxonomic Information COLEOPTERA
Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ CARABIDAE	83 D LD 6	5-21	2.8	DK. BRN.			ELYTRA SHORT			
✓ STAPHYLINIDAE	83 D LD 7		1.6	BRN						
✓ TENEBRIONIDAE	83 D LD 14		5.2	DK BRN						
✓ CLERIDAE	83 D LD 18	5-20	2.8	DK BRN			[illegible] PUNCTATE			

C.11.3.2-17

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number RIO BLANCO

Site name and number SITE D

Sampling technique LITTER DVAC

Species List Reference No. 83 D LD

Taxonomic Information HEMIPTERA, HOMOPTERA

Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
HEMIPTERA ADULT	83 D LD 8	A-1 S-14								
IMMATURE HEMIPTERA	83 D LD 17	S-3								
HOMOPTERA	83 D LD 11	A-6 S-10 C-3								

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.2-18a

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Project name and number 83 Rio Blanco

Site name and number SITE 5

Sampling technique LITTER DVAC

Species List Reference No. 83 5 LD

Taxonomic Information CHILOPODA, PSEUDOSCORPIONIDA, ACARI, ARANEIDA, LEPIDOPTERA

Identifier D. Paschen

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ORDER, GEOPHILOMORPHA	835 LD 1	D-10	17	YELLOW W/ORANGE HEAD	NO OCELLI, ANT. 14 SEG.			47 PRS. LEGS		
ACARI	24	D-2								
PSEUDO-SCORPIONIDA	83 5 LD 2		1.7-2.3	BRN	ORANGE PEDIPALPS					
ARANEIDA Gnaphosidae	25	A-16								

C.11.3.2-18b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Lepidoptera Noctuidae	835 LD26									
Pyralidoidea	27									

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.2-19a

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Project name and number 83 RIO BLANCO

Site name and number SITE 5

Sampling technique LITTER DVAC

Species List Reference No. 83 5 LD

Taxonomic Information HYMENOPTERA

Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
FORMICIDAE	83 5 LD 4		4.1	ORANGE W/BRN HEAD + ABD.	RIDGES		LONG ABD 2 SEG PETIOLE			
FORMICIDAE	83 5 LD 4 5		3.5	DK. ORANGE W/BRN HEAD + ABD	RIDGES		SHORT, ROUNDED ABD 2 SEG PETIOLE			
FORMICIDAE	83 5 LD 6		2.4	ORANGE W/BRN HEAD + ABD			SHORT ABD 2 SEG PETIOLE			
FORMICIDAE	83 5 LD 7		2.7	ORANGE W/BRN HEAD + ABD			LONG ABD 2 SEG PETIOLE			
FORMICIDAE	83 5 LD 8		1.7	ORANGE			2 SEG PETIOLE			
FORMICIDAE	83 5 LD 11		2.1	BRN			1 SEG PETIOLE			
FORMICIDAE	83 5 LD 12		1.8	BRN			[illegible]			

C.11.3.2-19

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
BRACONIDAE	835 LD22		1	BRN.						

C.11.3.2-20

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number SITE 3

Sampling technique LITTER PAN.

Species List Reference No. 83 5 LD

Taxonomic Information THYSANOPTERA, DIPTERA

Identifier J. E[illegible]CHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
THYSANOPTIRA	83 5 LD 13	A-4	1.8	DK. BRN METALLIC						
DIPTERA UNKNOWN LARVAE	83 5 LD 17		2.6	YELLOW						

C.11.3.2-21

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE 5

Sampling technique LITTER DVAV

Species List Reference No. 83 5 LD

Taxonomic Information COLLEMBOLA

Identifier D, [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ENTOMOBRYIDAE	835 LD18	D-20	.9- 1.2	PURPLE						

C.11.3.2-22

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco
Site name and number SITE 5
Sampling technique LITTER DVAC

Species List Reference No. 83 5 LD
Taxonomic Information COLEOPTERA
Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ CURCULIONIDAE	83 5 LD 15		1.6	BLK W/GRAY STRIATION				ORANGE		
✓ CURCULIONIDAE	83 5 LD 16		3.1	GRAY						
✓ STAPHYLINIDAE	83 5 LD 19		3.8	DK. BROWN	LG. COMPOUND EYES					
✓ CLERIDAE	83 5 LD 20	D-18	4.1	DK BRN			PUBESCENT PUNCTATE			
✓ CARABIDAE	83 5 LD 21	D-6	3.3	DK BRN.			ELYTRA SHORT COVER DIVIDE 1ST [illegible] SEG.			
unknown larvae	23									

C.11.3.2-23

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE 5

Sampling technique LITTER DVAC

Species List Reference No. 835 LD

Taxonomic Information THYSANURA

Identifier D. ROSENHEIM

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
MACHILIDAE	835 LD 9		2.5	ORANGE						

C.11.3 2-24

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE 5

Sampling technique LITTER PANS

Species List Reference No. 83 5 LD

Taxonomic Information HEMIPTERA, HOMOPTERA

Identifier D. GOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
IMMATURE HEMIPTERA	83 5 LD 3	D-17								
MATURE HEMIPTERA	83 5 LD 14	A-1 D-2	6							
HOMOPTERA CICCACELLIDAE	83 5 LD 10	D-11 A-6 C-3								

LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83 Site Name & Number [illegible] Site ~~4~~ 1

Collection Date 1 June 75 Species List Ref. No. 83 A&TD

Sampling Means Trap DVAC Rabbit brush Sorting Means T[illegible]

plant sp. Chrysothamnus nauseosus

	Species Reference Number plant dia (m)	21 0.58	22 0.46	23 0.66	24 0.33	25 0.43	.42 DVAC CALIB	22-A Sweep Calib.	8	9	10	Total
X	1	1		1	5		1					8
X	2	1			2	1						4
X	3	2										2
X	4	1										1
X	5	1										1
X	6	1										1
X	✓7	7	1	2	3	22						35
X	✓8	5		5	1	2	1	1				15
X	9	3		1	2							6
X	10	1	4	38	2	2	3					50 12
X	11	1		1								2
X	12	2	1	1		1						5
X	✓13	2	1									3
	✓14	2		1								3
X	✓15	4	1	2	1	2						10
X	✓16	6	8	5	2	6						18
X	✓17	2		1		1						4
X	✓18	3		2								5
X	19	1				1						2
X	20						1					1
X	✓21		1									1
X	22		1									1
X	23		3	2								5
X	✓24		2									2
X	✓25		1	1	2	2						6
X	✓26		1			1						2
X	27		1									1
X	28		6	2	3	33		3½				47
	29							1				1
X	✓30							1				1
X	31			2								2
X	32			3		5						[illegible]
X	33			3	2	1						6
X	34			1								1
X	✓35			1								1
X	36			1								1
X	37			1		2						[illegible]
X	38			1								
X	39			1								
X	40			1								1

[illegible] PROGRESS REPORT

Page 2 of 2

Project 83 Site A Sp.list ref. no. 83A TD Date 1June 75

		21	22	23	24	25	42	22-A				
X	41			1								
X	2				1							
X	✓3				1							1
X	✓4				1							1
X	5					12						12
X	6					1						
X	7											
X	✓8											1
X	9											
X	50					2						2
X	✓1											
	2											
	3											
	4											
	5											
	6											
	7											
	8											
	9											
	0											
	1											
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	9											
	0											

[illegible] REPORT

LAB ANALYSIS - INVERTEBRATES

2

Project Name & Number Rio Blanco #83　　Site Name & Number Site E South P-J

Collection Date 2 June 75　　Species List Ref. No. 83E TD

Sampling Means Trap DVAC Shrubscrape　　Sorting Means Berlese and Hand

plant sp. artiplex convertifolia

Species Reference Number	~~1~~26	~~2~~37	~~3~~38	~~4~~39	~~5~~40	6	7	8	9	10	Total
plant dia (m)	0.25	0.36	0.61	0.51	0.46	39+ Berlese calib.					
X 1	4										4
X 2	6	11	7	2	5						31
X ✓ 3	2			1							3
X 4	1		1								2
X ✓ 5	1										1
X ✓ 6	1	2	2		3						8
X ✓ 7	1	2	6	3	3						15
X 8		1									1
X 9		1									1
X ✓ 10		1									1
X ✓ 11		1			1						2
X 12		1									1
X 13		2	3			Not Using					5
X 14		1									[illegible]
X ✓ 15		2									2
X ✓ 16		1		1							2
X 17		1									
X 18			6								[illegible]
X 19			1	1							[illegible]
X 20			2		1						[illegible]
X 21			2		1						
X ✓ 22				1	3						4
X 23				1							
X ✓ 24					1						1
X ✓ 25					1						1
X ✓ 26					1						1
27											
28											41
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											

LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco #83 Site Name & Number North P-J site C 3

Collection Date 3 June 75 Species List Ref. No. 83C-TD

Sampling Means Trap DVAC (ARTR) Sorting Means Berlese, Hand

Artemisia tridentata

Species Reference Number	Sample Number plant dia. (m) 0.51 ~~1~~ 49	0.15 ~~2~~ 50	0.23 ~~3~~ 51	0.23 ~~4~~ 52	0.28 ~~5~~ 53	DVAC calib ~~6~~ 81	Berlese calib from #51 7	8	9	10	Total
X 1	2	6		1	8		1				18
X 2	1										1
X ✓3	1										1
X ✓4	1										1
X 5	1				1						2
X 6	1	1			2						4
X ✓7						1					1
X 8		6			2						8
X ✓9		1									1
X ✓10		4		1	3		2				10
X ✓11		1									1
X 12		1									1
X 13		1	1		2						4
X ✓14		1									1
X 15		1									1
X ✓16		1									1
X 17			8	1	2		1				12
X 18			1								1
X ✓19			1								1
X 20			1		2						3
X ✓21			1								1
X ✓22				1	1						2
X 23					1						1
X 24					1						1
X ✓25					1						1
X 26					1						
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											

[illegible]

4

LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio blanco #83 Site Name & Number upland sage D

Collection Date 31 May 1975 Species List Ref. No. 83D TD

Sampling Means Trap DVAC #11 Sorting Means Berlese
from Artemesia tridentata ARTRT

plot dia (m) Species Reference Number	0.46 11	0.43 12	0.43 13	0.53 14	0.38 15	6 43	7 #1	8	9	10	Total
x 1	38	7	18	1	5		1				70
x 2	3		3	16	1		3				26
x 3	8	11	2		4						25
x 4	1	1	23	5	11		1				[illegible]
x 5	2		4	1	3						10
x 6	1										1
x 7	1										1
x 8	1										1
x 9	8	6	5	10	8						[illegible]
x 10	2			1	1						4
x ✓11	1										1
x ✓12	1										1
x ✓13	2										2
x 14	1	1	1	1	1						5
x ✓15	1										1
x ✓16	4		2								6
x ✓17	2		1		1	2					6
x ✓18	1				3	1					5
x 19	1			8	2						11
x ✓20	1			1							2
x 21			1	1		1	2				5
x 22		3	1		2		1				7
x ✓23		1									1
x 24		1	2								3
x 25		2			3						5
x ✓26		1									1
x ✓27		1			1						2
x ✓28		2		1	1						4
x ✓29		1									1
x ✓30		1									1
x ✓31			1	1							2
x ✓32			1								1
x ✓33			1								1
x ✓34			1		1						2
x 35			1								1
x 36			1	1							2
x ✓37			1								1
x 38				1	1		2				4
x 39				1							1
x ✓40				1							1

#11 - Cut for DVAC calibration

[illegible]

Page 2 of 2

Project 83/02 Site D Tlup DUAC Sp.list ref. no. 83DTD Date 31 May 75

		11	12	13	14	15	41					
x	✓ 41				1							1
*	2					1						1
x	✓ 3					1						1
	4											
	5											
	6											
	7											
	8											
	9											
	0											
	1											
	2											
	3											
	4											
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	9											
	0											

[illegible] REPORT

3/6

LAB ANALYSIS - INVERTEBRATES

5A

Project Name & Number Rio Blanco #83 Site Name & Number Site 5 mixed brush

Collection Date 3 June 75 Species List Ref. No. 835-TD

Sampling Means Trap DVAC Amalanchier utahensis (serviceberry) Sorting Means Berlese

plant dw (gm) Species Reference Number	0.43 ~~1~~ 54	0.51 ~~2~~ 55	0.58 ~~3~~ 56	0.20 ~~4~~ 57	0.15 ~~5~~ 58	DVAC 6 CALIB	Berlese 7 Calib from sample #57	8	9	10	Total
X 1	1										1
X 2	3	3									6
X 3	4	1	2			Nothing					7
X 4	5										5
X 5	10	4									14
X 6	1	38									39
X 7	1										1
X 8	11	10	52								73
X 9	3	1									4
X 10	1	1									2
X 11	1		2	1	1		Nothing				5
X 12	1										1
X ✓13	1										1
X ✓14	1	1									2
X ✓15	1	2		2	1						6
X 16	1										1
X 17	1		2								3
X ✓18	1		1								2
✓ 19	1										1
X 20		1									1
X 21		1	3								4
X ✓22		1									1
X ✓23			1	2	2						5
X 24			15								15
X 25			3								3
X 26			1								1
X 27			2								2
X ✓28			1								1
X ✓29			1								1
X ✓30			1								1
X 31			1								1
X 32			1								1
X ✓33			1	1							2
X 34			1								1
X 35				1							1
X ✓36					1						1
X 37					1						1
38											
39											
40											

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LAB ANALYSIS - INVERTEBRATES

5B

Project Name & Number Rio Blanco #83 Site Name & Number Mixed Brush Sites

Collection Date 4 June 75 Species List Ref. No. 83STD Symph Snowberry Symphoricarpos oreophilus

Sampling Means Trap DVAC Snowberry Sorting Means Berlese

plant dia. (m)

Species Reference Number	0.51 ~~1~~ 66	0.15 ~~2~~ 67	0.23 ~~3~~ 68	0.23 ~~4~~ 69	0.28 ~~5~~ 70	6	7	8	9	10	Total
x 1	34	1		5	17						57
x 2	5	1	13	5	1						25
x 3	1	1									2
x 4	1			2							3
x 5	1	5	1		1						8
x 6	1										1
x ✓ 7	2										2
x 8	29			2	6						37
x 9	2										2
x 10	1	1			1						3
x 11	1				1						2
x ✓ 12	4										4
x ✓ 13	1										1
x ✓ 14	1										1
x ✓ 15	2										2
x ✓ 16	1										1
x 17		6		6	21						33
x ✓ 18		1									1
x 19		1									1
x ✓ 20		1									1
x 21		2		2							4
x 22			1								1
x ✓ 23			3	1							4
x ✓ 24			1	1							2
x ✓ 25			1								1
x ✓ 26			1		1						2
x ✓ 27			1								1
x ✓ 28			1		1						2
x ✓ 29			1	2							3
x ✓ 30				1							1
x 31				1							1
x 32					1						1
33											210
34											
35											
36											
37											
38											
39											
40											

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.3-9a

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RBOSP PROCESSED [illegible]

Project name and number Blanco 83

Site name and number [illegible]

Sampling technique Trap D-VAC Rabbitbrush

Species List Reference No. 83ATD

Taxonomic Information Formicidae

Identifier E.K

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Formica sp. 8	TD1	5(S)-3 D-[illegible] [illegible]-1	4.0-4.5	[illegible] brn			1 pet.			
✓ Leptothorax ~~[illegible]~~ rugatulus brunnescens 1	TD2	5(A)-4 D-4	5.0-5.5	dk rd brn	ant 11 seg	([illegible]	2 pet.	diff from L. ranunculus is in mesoepinotal suture		
✓ Formica oporaeventris ?	TD3	[illegible]	6.0-7.5		rd	rd	brn 1 pet			
✓ unknown Myrmicinae ~~Leptothorax~~ ~~[illegible]~~ + ranunculus ~~[illegible]~~	TD 32				ant 11 seg					
✓ Myrmica subuleti americana 2	TD 31	5(A)-1 D-2 5(S)-4								
✓ Tapinoma sessile 6	TD 33	5(A)-0 [illegible]-1 D-3 [illegible] 5(S)-1					reduced pet.			
✓ Formica sp 12	TD 45		5.0	brn						

C. 11.3.3-96

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Formicidae	E3A T.D29									

C.11.3.3-10a

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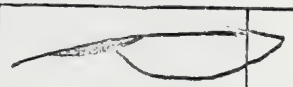
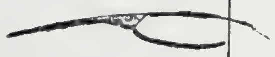
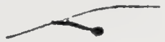
TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number 1 June 75
Sampling technique Trap DVAC Rabbitbrush

Species List Reference No. 83A TD
Taxonomic Information Hymenoptera

Identifier RER

[illegible] RT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Braconidae 1	TD 4	5(3)-31	~1.5	blk	ant >20 seg ~ body length drk brn	blk	brn			
✓ Diapriidae 1	TD 34		2.1		ant from frontal shelf					
Eulophidae 1	22		~1.3	blk	blk	blk	blk	lite w/ blk bands		
Elophidae 1	TD 5		~1.2		blk ant short, elbowed, less than 10 seg	blk	brn	tarsi 4 seg brn		
Platygasteridae 1	TD 6		.8	# drk brn	blk				no veins clear	
Platygasteridae 5	TD 23		1.2	blk				yllw brn	slite yellow tint	
Pteromalidae 1	46									

C. 11. 3, 3-10

Family & Species ?	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
unknown wingless 1	47									
✓ Diapriidae 1	42		2.5	blk	antennal shelf				veins clear	

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.3-11

ECI ecology consultants, Inc.

Project name and number Rio Blanco 83

Site name and number greasewood-sage Site A

Sampling technique Trap DVAC Rabbitbrush

Species List Reference No. 83A TD

Taxonomic Information Diptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Phoridae 2	19		1.5	brn					veins lite	

C.11.3-3-12

ECI

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio blanco 83

Site name and number Site A

Sampling technique Trap DVAC

Species List Reference No. 83A TD

Taxonomic Information Lepidoptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Arctiidae larvae 1	21		5							
unknown larvae 1	43									

C. 11.3.3-13a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #53

Site name and number Site A

Sampling technique Trap DVAC

Species List Reference No. 83A-TD

Taxonomic Information Coleoptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Anthicidae 35	7		4.5- 5.0		distinctive	pronotum 				
✓ Chrysomelidae 1	44		2.5		dark metallic	green	flea beetle			
Curculionidae 15	8	5(5)-21	2.2 & 3.0 two sizes	blk scaly	 rd			brn		
✓ Carabidae 1	40	0	9.0	dk brn						
✓ Carabidae 1	41		3.0	blk						
unknown adults	20									
Lathridiidae	9		~2.0					[illegible]		

C. 11.3.3-13b

Family & Species 3	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
unknown Larvae 2	50									
Curculionidae 1	51		7.0	rd brn	short					
	[illegible]									

C.11.3.3-14a

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number 1 June 75

Sampling technique Trap DV/AC Rabbitbrush

Species List Reference No. 82ATD

Taxonomic Information ACARI, ARANEIDA PHALANGIDA, THYSANOP

Identifier BEK

Family & Species 168	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Acari	10	B-2 5(A)-[illegible] C-17 [illegible] D-9	—							
Hahniidae	11	5(A)-12								
Dictynidae	12	B-13 5(S)-11 D-25 C-13								
PHALANGIDA 1	36									
THYSANOPTERA 2	26									
THYSANOPTERA 1	27									
THYSANOPTERA 41	28	D [illegible]								

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Gnaphosidae 3	37	B-14 5(S)-9 5(A)-10 C-25 D-28								
Salticidae 1	38	B-20 D-21 5(A)-11								
Lycosidae 1	39	5(A)-27 C-12								
Thomisidae 1	49	5(S)-10 D-24 5(A)-22								

C.11.3.3-15a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number 1 June 75

Sampling technique Trap DVAC Rabbitbrush

Species List Reference No. 834-TD

Taxonomic Information Hemip

Identifier PEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Tingidae imm 3	13		—			Spiny →				
Hemip immi. 3	14	D-18 B-5 5(S)-15								

C-11.3.3-16

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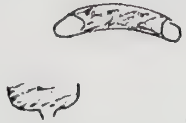
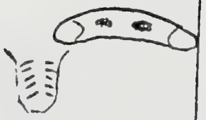
TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number ~~Tract 75~~ Site A
Sampling technique Trap DVAC Rabbitbrush
Species List Reference No. 83A-TD
Taxonomic Information Homop.
Identifier PEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Delphacidae 10	14	D-26	~2.0			2 middorsal & 2 lateral brn stripes				
Cicadellidae 1	48			cream w/ green tint						
Cicadellidae 1	30		4.0							
Cicadellidae nymph 3?	16		✓			2 brn middorsal stripes 2 lateral stripes				
Cicadellidae nymph 2	24		✓	brn 1°		middorsal white line on brn	brn w/ white spots			
Homop unknown 5? Scale-like superfam Coccoidea	18 and slide	[illegible]								
Homop imm unknown 4	17		✓							

C. 11.3.3 - 16b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
✓ Cicadell.dae 1	35	D-27 [illegible]	2.5						clear veins white apical dark	

C.11.3.3-17

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site A
Sampling technique Trap DVAC

Species List Reference No. 83A TD
Taxonomic Information Hompp

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Aphididae 1	25	5(s).14		lite	rd eyes					

C.11.3.3- 18a

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

Site name and number South #I Site B

Sampling technique Trap DVAC

Species List Reference No. 83BTD

Taxonomic Information ACARI, THYSANOP, PSEUDOSCORP, LEPIDOPT, ARANEIDA

Identifier

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ACARI	TD 2	5(C)-8 C-17 5(S)-6 D-9 A-10	✓							
THYSANOPTERA	TD 3	83A TD28								
✓ PSEUDOSCORPIONIDA	TD 4	5(A)-21 C-6								
Lepidopt larvae unknown	26									
Lepidoptera Tortriccidea larvae	7	C-22								

C. 11. 3. 3-186

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Dyctiniidae	13	5(S)-11 D-25 A-12 C-13	5							
Gnaphosidae	14	5(S)-9 A-37 C-20 5(A)-15 D-38	5							
Salticidae	20	D-21 A-38 5(A)-11								

C.11.3.3-19a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

Site name and number South PJ site B

Sampling technique Trap DVAC

Species List Reference No. 83BTD

Taxonomic Information HEMIP + HOMOPTERA

Identifier BEK

[illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Hemip imm (Miridae)?	TD5	M-14 D-18 S(S)-15		yllw						

C.11.3.3-19b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
✓ unknown homop Coccoidea	TD 6	[illegible] A-18 5(C)-18								
✓ Cicadellidae imm	10	C. 21								
✓ Cicadellidae imm	11									
✓ Cicadellidae	22								white veins	
✓ Cicadellidae imm. gen	24									

C. 11.3-3-20

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco # 83

Site name and number South Site B

Sampling technique Trap DVAC

Species List Reference No. 83B TD

Taxonomic Information Coleoptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Curculionidae	15	C-10 5(N)-15 5(S)-[illegible] D-13	5.5	rd brn						
✓ Elateridae	16	C-4 D-11 5(H)-36	3.5	rd brn						
Dermestidae larvae	17									
unknown larvae	21									
Dermestidae	23									
✓ Anobiidae	25	C-9								

C.11.3.3-2/a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco # 83

Site name and number South P-T Site B

Sampling technique Trap DVAC

Species List Reference No. 83BTD

Taxonomic Information Hymenoptera

Identifier BEIK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Formicidae Tapinoma [illegible]	TD 1	C-2 S(A)-6 S(S)-1 F-[illegible] D-[illegible]								
✓ Leptothorax sp	18	D-5 S(S)-17 C-1 S(A)-5	3.0-3.5		12 seg ant					
✓ Eciton nigrescens	19	S(A)-3 D-1 S(S)-5 C-8								

C.11.3.3-21b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Braconidae	8		1.5-2.0						round stigma most veins clear	
Eulophidae	9									
Diapriidae	12									

C.11.3.3-22a ECI

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

Site name and number North PI Site C

Sampling technique Trap DVAC

Species List Reference No. 83CTD

Taxonomic Information PSEUDOSCORPIONIDA NEUROPTERA LEPIDOPT, ACARI, ARANEIDA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
PSEUDOSCORPIONIDA	6	5(A)-2 I-4								
ACARI	17	5(S)-2 D-9 B-2 5(A)-2 A-10								
Superfam Tortricoidea larvae	22	B-7								
Pterophoridae larvae	16									
Noctuidae larvae	14	5(A) [illegible] [illegible]-16 5(S) [illegible]								
Lepidopt larvae unknown	7									

C.11.3.3-226

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Lycosidae	12	A-39 S(A)-27								
Dictynidae	13	S(S)-11 D-25 A-12 B-13								
Oxyopidae	18									
Gnaphosidae	20	B-14 S(S)-9 A-37 S(A)-10 D-32								
Myrmeleontidae	26									

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.3-23

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Project name and number Rio Blanco #83

Site name and number North PJ Site C

Sampling technique Trap DVAC

Species List Reference No. 83 C TD

Taxonomic Information Homoptera

Identifier PEK

RBOSP #

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Cicadellidae imm	21	B-10			bulb nose pupil eye					

C.11.3.3-2~~4~~

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83
Site name and number North PJ Site C
Sampling technique Trap D/AC
Species List Reference No. 83C TD
Taxonomic Information Coleoptera
Identifier ZLK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Elateridae	3		7.0	dk brn						
✓ Elateridae	4	B-16 [illegible] D-11	5.5	rd brn						
Carabidae larvae	5		✓							
✓ Anobiidae	9	B-25								
✓ Curculionidae	10	B-15 [illegible] [illegible] D-13								
✓ Ostomidae	11									
unknown larvae	24									

C. 11.3.3-25

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

Site name and number North PI Site C

Sampling technique Trap DVRC

Species List Reference No. 83C TD

Taxonomic Information Hymenoptera

Identifier

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Leptothorax	1	5(S)-17 D-5 5(A)-5 B-18	2.5-3.0	vl brn						
✓ Tapinoma sessile 1	2	5(A)-6 B-1 5(S)-1 A-3 D-3	3.0-3.5	brn						
✓ Eciton	8	5(A)-5 B-19 D-1 5(S)-5								
✓ Formica male 1	23									

C.11.3.3-26

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

Site name and number North PJ Site C

Sampling technique Trap DVAC

Species List Reference No. 83CTD

Taxonomic Information DIPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Therevidae larvae	15									
Chironomidae	19									
✓ Cecidomyiidae	25									

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.3-27

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Project name and number Richlanco 83

Site name and number Site D

Sampling technique Trap DVAC

Species List Reference No. 83DTD

Taxonomic Information Hemiptera

Identifier FEK

R[illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Lygaeidae	TD 15	3.A.1.39	4.0-4.5	1°blk	eyes rd ant 1st 3 seg brn, last drk			front femora enlarged all brn		
unknown Imm.	TD 18	A-14 3-5 5(5).15	var							
Miridae imm	TD 34		—	brn & rd	antlike ······ >					
Tingidae	TD 41									

C.11.3.3-28a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 93

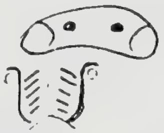
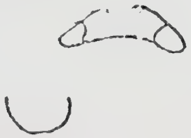
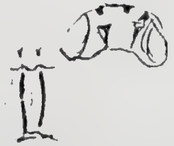
Site name and number site D

Sampling technique Trap DVAC

Species List Reference No. 83DTD

Taxonomic Information Homoptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Cicadellidae imm.	TD 26		✓							
✓ Cicadellidae ✓	TD 27	A-35	2.8			wings close in veins white apical veins brn				
✓ Cicadellidae	TD 40					w/ grn & pink tinges				
Homop imm.	TD 30									
Delphacidae ✓	TD 28	A-15	2.2			wing pads	2 dark dorsal stripes 2 lateral			
Delphacidae ✓	TD 29		2.2	Cream						
Delphacidae	TD 32		2.5	blk & [illegible]						

C. 11.3.3-28b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Cicadellidae imm / 1	TP 43			yllw	 ✓ all yllw					

C. 11.3.3-29a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 82

Site name and number site D

Sampling technique Trap DVAC

Species List Reference No. 83 DTD

Taxonomic Information Homoptera

Identifier BJK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Psyllidae ✓	TD 33		1.5	brn & white pattern					brn speckled pattern	

C.11.3.3-30

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

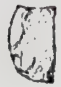
Site name and number Site D

Sampling technique trap DUAC

Species List Reference No. 83 D TD

Taxonomic Information Coleoptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Coccinellidae 5 ✓	TD14	[illegible]	1.5	brn to blk						
✓ Coccinellidae 1	TD 35		2 5	blk & white						
✓ Chrysomelidae 1	TD23		3.6	brn			blk speckling			
✓ Tenebrionidae 2	TD 36		6.0 - [illegible]	dvk [illegible]	[illegible]					
✓ Carabidae 1	TD 39		[illegible] 4.0	[illegible]		[illegible] as head.				

C.11.3.3-31

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site D

Sampling technique Trap DVAC

Species List Reference No. 83DTD

Taxonomic Information ~~[illegible]~~ Coleoptera

Identifier

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Elateridae 1	TD 11	C-4 B-[illegible] 5([illegible])	4.4	brite rd brn		robust, rounded prothorax				
Elateridae Larvae 1	TD 37	5(A)-[illegible]	-							
Scarab~~idae~~aeidae 1	TD 12		3.6	rd brn				fore & hind tibia expanded		
Curculionidae 2	T-D 13	B-15 C-10 [illegible] 5(A)-15	5.0	drk rd brn to black	Short, stout snout					

C.11.3.3-32

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rioblanco #83
Site name and number Site D
Sampling technique Trap DVAC

Species List Reference No. 83D TD
Taxonomic Information Hymenoptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Formicidae Eciton nigrescens 7?	83D TD1	5(M)-3 B-19 5(S)-5 C-8	1.5-2.0	lite rd brn	Small eye w/ one facet		2 seg. pedicel.			
✓ Formicidae Myrmica sabuleti americana [illegible]	TD2	5(S)-4 A-31 5(A)-[illegible]	4.0-5.0	drk rd brn	Post. of clypeus w/ deep impression no hairs behind hd (long) scape at right angle w/ small surrounding lamella	pro-mes suture not present dorsally meso-epi suture indistinct	2 seg ped			
✓ Formicidae Tapinoma sessile	TD3	5(A)-6 B-1 A-33 C-2 5(S)-1	2.5 3.0	drk brn		smooth, sutures evident	pedical 1seg, vestigal slit anal opening			
✓ Formicidae Leptothorax rugatulus 42	TD4	A-2 5(A)-29	2.0-2.5	orange brown	ant 11seg		2 seg pedicel			
✓ Leptothorax furunculus 10	TD 5	5(S)-17 C-1 5(A)-5 B-18	3.0	drk rd brn	ant - 12 seg slite punc. all over	no sutures apparent slite punc. [illegible]				
✓ Formica sp 7	TD 22	[illegible] A-1 5(S)-[illegible]	3.0-3.5	brn	smooth, slightly [illegible] rugose ant [illegible] seg [illegible] prominent	mesonot constricted sutures apparent	opening nozzle-like ped. 1 seg with tall, thin node			
16										

C.11.3.3-33

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

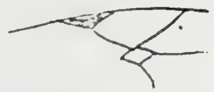
Site name and number Site D

Sampling technique Trap DYAC

Species List Reference No. 83DTD

Taxonomic Information Hymenoptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Ichneumonidae 1	TD6		3.0	1° blk	ant ~ 23 seg 2/3 - 3/4 bdy lng brn		brn pale			

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.3-34

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Project name and number Rioblanco 83

Site name and number Site D

Sampling technique Trap DYAC

Species List Reference No. 83D TD

Taxonomic Information Hymenoptera

Identifier BEIL

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Dryinidae	TD 7		1.0	brn	ant. arising from frontal shelf - 10 seg. eyes large				none	
✓ Diapriidae	TD 8		~1.0 ♂ 2.0 ♀	brn "	ant. arising of frontal shelf - 12 seg "		1st seg. forming petiole	front tibia w/ claws	wingless ♂ winged ♀	

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.3-35a

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Project name and number Rioblanco #83

Site name and number Site D

Sampling technique Trap DVAC

Species List Reference No. 83DTD

Taxonomic Information Acari, Araneida, Thysanop Lepidoptera, Collembola

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ACARI Acari ✓	TD9	[illegible] A-10 [illegible] C-17 [illegible]	—							
ARANEIDA unknown spiderlings	TD 10		—							
Salticidae	TD 21	A-38 B-20 S(A)-11								
Thomisidae ✓	TD 24	[illegible]-10 A-47 [illegible]								
Dictynidae	TD 25	B-1[illegible] A-1[illegible] [illegible] C-1[illegible]								
THYSANOPTERA —	TD 20 slide			ylw						
COLLEMBOLA Isotomidae	TD19			drk purple						

C.11.3.3-35b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Noctuidae larvae.	TD 16		var,		no 2ndary setae Crochets forming a single band prespiracular wart of prothorax w/ 2 setae tubercle vii on mesa & meta thorax w/ 1 setae					
unknown early instar	TD 17	[illegible] [illegible] 2-14	var							
Superfam Pyralidoidea	TD 31									
Thysanoptera	Slide TD 42									

C.11.3.3-36

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rioblanco #22

Site name and number Site D

Sampling technique Trap DVAC

Species List Reference No. 93DTD

Taxonomic Information Araneida

Identifier PCK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Gnaphosidae	TD 38	[illegible]								

C. 11.3.3. -3 7

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #33

Site name and number Mixed Brush Site 5

Sampling technique TrapDUAC - [illegible]

Species List Reference No. 835TD Serviceberry

Taxonomic Information Orthoptera, ACARI, COLLEMBOLA, ARANIEDA, PSEUDOSCORPIONIDA, DIPTERA, THYSANOP, LEPIDOPT

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ORTHOPTERA ✓ Gryllacrididae	1									
ACARI ✓	8	5(S)-8 D-9 B-2 A-10 C-17								
COLLEMBOLA Isotomidae ✓	9									
PSEUDOSCORPIONIDA	21	B-4 C-6								
DIPTERA Therevidae ✓ larvae	37									
Thysanoptera ✓	27 slide	5(S)-2								

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Gnaphosidae	10	B-14 5(s)-9 A-37 C-20 D-34								
Salticidae	11	A-38 B-20 D-21								
Hahniidae	12	A-11								
Thomisidae	26	A-49 5(s)-10 D24								
Lycosidae	27	A-39 C-12								
Geometridae larvae	28									
✓ Noctuidae larvae	23	5(s)-7 B-16 C-14								

C.11.3.3-38a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83
Site name and number Mixed Brush Site 5
Sampling technique Trap DVAC

Species List Reference No. 83STD Serviceberry
Taxonomic Information Homoptera, HEMIPTERA

Identifier REK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Psyllidae ✓	13									
✓ unknown Coccoidea ✓	14	A-18 B-6 5(5)-18								

C.11.3.3.-385

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Aradidae	22									
Lygaeidae	30	D-15								

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

Site name and number Mixed Brush Site 5

Sampling technique Trap DVAC

Species List Reference No. 83 STD Serviceberry

Taxonomic Information Coleoptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Curculionidae	15	B-15 C-10 S-26 D-13								
✓ Carabidae	16									
unknown larvae	17									
elateridae Larvae	18	D-37								
Staphylinidae	19									
✓ Tenebrionidae	31									
Erotylidae	32									

C. 11.3.3-39b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Cleridae	33									
Scydmaenidae	34									
✓ Coccinellidae	35	D-14								
✓ Elateridae	36	C-4 D-11 B-16								

C.11.3.3.40a
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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number RioBlanco #23
Site name and number Mixed Brush Site 5
Sampling technique Trap DVAC
Species List Reference No. 835TD Serviceberry
Taxonomic Information Hymenoptera
Identifier PEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Myrmica	2	D-2 A-31 S(S)-4	~5.0	rd brn						
✓ Eciton	3	B-11 D-1 S(S)-5 C-8								
✓ Monomorium	4	S(S)-2								
✓ Leptothorax	5	D-5 S(S)-17 C-1 B-18	3.0		12 seg ant.	1				
✓ Tapinoma	6	B-1 A-33 D-3 C-2 S(S)-1								
✓ Formica	7	A-1 L-[illegible] S(S)-3								
Formica	20	H-3	7.0 6.0	rd hd thx blk abd						

C.11.3.3-4/1a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Mixed Brush

Sampling technique Trap DVAC

Species List Reference No. S35TD Symph

Taxonomic Information LEPIDOPTERA, ACARI, ARANEIDA, THYSANOP, DIPTERA

Identifier

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Noctuidae larvae	7	5(F)-23 L-16 C-14								
Noctuidae adult	30									
ACARI	8	D-9 B-2 5(A)-8 C-17 A-10								
Thysanoptera	23	83 5 TD 29 Amk								
Thrividae ~~[illegible]~~ larvae	21									
✓ Cecidiomyidae	24									

C.11.3.3-41b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Gnaphosidae	9	A-37 B-14 S(A)-10 C-20 D-35								
Thomisidae	10	D-24 A-49 S(A)-26								
Dictynidae	11	D-25 B-13 A-12 C-13								
~~Thysana~~										

C.11.3.3-4 2a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

Site name and number Mixed Brush - 5

Sampling technique Trap DVAC

Species List Reference No. 83 STD Symph

Taxonomic Information HEMIPTERA, HOMOPTERA

Identifier AEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Cicadellidae nymph	12		5	brn & white pattern						
Cicadellidae Nymph	13			brn						
Aphididae	14	A 25		lite						
Coccoidea unknown	18	A - 19 B - 6 5(A)-14								

[illegible] PROGRESS REPORT

C.11. 3.3-42b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
✓ Hemip imm	15	C-5 A-14 D-18		rd & white						
✓ Lygaeidae	16									
✓ Tingidae	25									

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.3-43 ECI

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Project name and number Rio Blanco #83

Site name and number Mixed Brush - 5

Sampling technique Trap DVAC

Species List Reference No. 83STD Symph

Taxonomic Information COLEOPTERA

Identifier

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
unknown larvae	19									
✓ Meloidae	20									
✓ Curculionidae	26	B-15 C-10 S-15 D-13	4.7	rd						
✓ Curculionidae	27		4.0	rd	heavy scales					
Curculionidae	28		3.2	blk	scaly					
Curculionidae	29	A-8	2.0	blk scaly						

C.11.3.3-44

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Mixed Brush Site 5
Sampling technique Trap D/A/C

Species List Reference No. 835TD Symph
Taxonomic Information Hymenoptera (Formicidae)

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Tapinoma sessile	1	5(A)-6 B-1 A-3 D-3 C-2								
✓ Monomorium	2	5(A)-4								
Formica	3	A-1 5(A)-7 D-27	4.0							
✓ Myrmica	4	D-2 5(A)-2 A-31	5.0							
✓ Eciton	5	5(A)-3 B-19 D-1 C-8								
✓ Leptothorax	17	D-5 C-1 5(A)-5 B-18	2.0		12 seg ant					

RBOSP [illegible]

C.11.3.3-446

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Ceraphronidae	6			♀ wingless						
✓ Pteromalidae	22									
✓ Braconidae	31	A-4								
✓ Braconidae	32									

LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83 Site Name & Number Site A

Collection Date 5 June 75 Species List Ref. No. 83A HS

Sampling Means Sweep (Herbacious) Sorting Means hand

Species Reference Number	Sample Number 92 1	2	3	4	5	6	7	8	9	10	Total
✓1	13										
✓2	2										
✓3	1										
✓4	1										
✓5	3										
✓6	3										
✓7	1										
✓8	1										
✓9	1										
✓10	1										
✓11	2										
✓12	1										
✓13	2										
✓14	8										
✓15	1										
✓16	1										
✓17	2										
✓18	1										
✓19	3										
✓20	1										
✓21	1										
✓22	3										
✓23	1										
✓24	1										
✓25	16										
✓26	5										
✓27	78										
✓28	1										
✓29	1										
✓30	2										
✓31	1										
✓32	4										
✓33	4										
✓34	3										
✓35	11										
✓36	9										
✓37	4										
✓38	4										
39	[illegible]										
40											

checked total with Table 2.3.9.3-21
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[illegible] REPORT

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83 Site Name & Number South PJ Site E

Collection Date 5 June 75 Species List Ref. No. 83 B 115

Sampling Means Sweep (Herb) Sorting Means Hand

Species Reference Number	Sample Number 93 1	2	3	4	5	6	7	8	9	10	Total
✓1	5										
✓2	1										
✓3	21										
✓4	1										
✓5	2										
✓6	6										
✓7	1										
✓8	1										
✓9	2										
✓10	2										
✓11	1										
✓12	1										
✓13	9~~8~~										
✓14	2										
✓15	1										
✓16	2										
✓17	2										
✓18	2										
✓19	1										
✓20	4										
✓21	1										
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											

checked total with Table 2.3.9.3-21
on 26 Sept. 1975 R. Daggett

C.11.3.4-3

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83

Site Name & Number North Pd Site C

Collection Date 5 June 75

Species List Ref. No. 83 C HS

Sampling Means Sweep (Herbaceous)

Sorting Means Hand

Species Reference Number	Sample Number										Total
	94 1	2	3	4	5	6	7	8	9	10	
✓1	1										
✓2	4										
✓3	4										
✓4	1										
✓5	1										
✓6	1										
✓7	1										
✓8	1										
✓9	1										
✓10	2										
✓11	2										
✓12	1										
✓13	2										
✓14	5										
✓15	1										
✓16	1										
17	[illegible]										
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
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31											
32											
33											
34											
35											
36											
37											
38											
39											
40											

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on 26 Sept. 1975 R. Paggett

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83
Site Name & Number Upland Edge Site D
Collection Date 5 June 75
Species List Ref. No. 83 D HS
Sampling Means Sweep (Herb)
Sorting Means Hand

Species Reference Number	Sample Number 96 ~~1~~	2	3	4	5	6	7	8	9	10	Total
✓1	1										
✓2	1										
✓3	4										
✓4	1										
✓5	2										
✓6	1										
✓7	1										
✓8	2										
✓9	3										
✓10	2										
✓11	1										
✓12	1										
✓13	1										
✓14	1										
15											
16											
17											
18											
19											
20											
21											
22											
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31											
32											
33											
34											
35											
36											
37											
38											
39											
40											

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C.11.3.4-5

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83 Site Name & Number Mixed brush #5

Collection Date 5 June 75 Species List Ref. No. 835 HS

Sampling Means Sweep (Herb) Sorting Means Hand

Species Reference Number	Sample Number 94 1	2	3	4	5	6	7	8	9	10	Total
✓1	1										
✓2	1										
✓3	3										
✓4	2										
✓5	1										
✓6	1										
✓7	1										
✓8	1										
✓9	1										
✓10	1										
✓11	1										
✓12	1										
✓13	7										
✓14	1										
✓15	1										
✓16	8										
✓17	3										
✓18	2										
✓19	2										
✓20	1										
✓21	1										
✓22	1										
✓23	1										
✓24	1										
✓25	1										
✓26	5										
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											

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C.11.3.-1-6a
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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site A
Sampling technique sweep (herb)
Species List Reference No. 83AHS
Taxonomic Information HOMOPTERA, ORTHOPTERA
ARANEIDA ACARI COLLEMBOLA
Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ ✓ Delphacidae	29									
✓ Aphididae	30	B-18								
x ORTHOPTERA Acrididae	31	C-1								
ARANEIDA Thomisidae	32	D-10								
ACARI	33									
COLLEMBOLA x Sminthuridae x	34									

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C.11.3.4.646

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Thy SANOPTERA x	35	33A TD28								
THYSANOPTERA x	36 slide									
THYSANOPTERA x	37 slide									
THYSANOPTERA x	38 slide									

C.11.3.4-7a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site A

Sampling technique Sweep (herbaceous

Species List Reference No. 83A HS

Taxonomic Information COLEOPTERA, HEMIPTERA HOMOPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Anthicidae	14									
Lathridiidae x	15									
Erotylidae x	16									
Chrysomelidae x	17									
Curculionidae x	18									
HEMIPTERA x Miridae	19									
x Miridae	20									

C.11.3.4-7b

[illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Lygaeidae x	21									
DIPTERA Pipunculidae x	22									
Anthomyidae x	23									
Chloropidae x	24									
HOMOPTERA Cicadellidae	25									
Cicadellidae	26									
x Cicadellidae imm	27									
Cicadellidae	28									

C.11.3.4-8a
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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site A
Sampling technique sweep (herb)

Species List Reference No. 83A HS
Taxonomic Information HYMENOPTERA

Identifier J. Ell

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ HYMENOPTERA FORMICIDAE x Formica sp	1	E-1 I-2 [illegible]								
✓ Formicidae x Tapinoma	2									
Formicidae x Leptothorax	3									
✓ Formicidae x Leptothorax	4	C-2 C-2								
Braconidae x	5	C-4								
Braconidae x	6									
Braconidae x	7									

C. 11.3. -1-86

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Braconidae x	8									
Mymaridae x	9									
Scelionidae x	10									
Eulophidae x	11	B-5								
Encyrtidae x	12									
Pteromalidae x	13	B-8								

C.11.3.4-9
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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83
Site name and number South PT Site B
Sampling technique Sweep (Herb)
Species List Reference No. 83B H8
Taxonomic Information HOMOP , ARANEIDA
Identifier ZEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Salticidae	15									
Homop Cicadellidae	16									
Cicadellidae imm	17									
Aphididae	18	A-30								
Psyllidae	19	D-11								
Psyllidae	20									
Psyllidae	21	5-17								

C.11.3.4 - 10a

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[illegible] REPORT

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

Site name and number South PF site B

Sampling technique Sweep (Herb.)

Species List Reference No. 83 B HS

Taxonomic Information Hymenoptera
HEMIP, COLEOP, DIPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Hymenoptera Formicidae x Formica sp	1	A-1 D-2 S-3								
Leptothorax x	2	C-3 A-4			11 seg					
Leptothorax x	3	S-4 D-3			12 seg					
Eulophidae x	4									
Eulophidae x	5	A-11								
Eulophidae x	6	D-1								
Pteromalidae x	7									

C.11.3.4-1-10b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
✓ Pteromalidae x	8	A-13								
Diptera Chamaemyiidae x	9									
COLEOPTERA Ptinidae x	10									
Scydmaenidae x	11									
Coccinellidae x	12									
HEMIPTERA x Miridae imm	13									
x unknown imm	14									

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Ab-4 PT Site C

Sampling technique Sweep (Herb.)

Species List Reference No. 83 C #8

Taxonomic Information ORTHOPTERA, HYMENOPTERA HEMIP, HOMOP

Identifier BEK

C.11.3.4-11a

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[illegible] REPORT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
x ORTHOPTERA Acrididae x	1	A-31								
x HYMENOPTERA Formicidae x Tapinema 4	2	D-1 5-5								
Leptothorax 4 x	3	E-2 A-4								
✓ Braconidae x	4	A-5								
Encyrtidae x	5									
Pteromalidae x	6	D-5								
Pteromalidae x	7									

C.11.3.4-11b.

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
DIPTERA Chloropidae x 1	8									
Empididae x 1	9									
✓HEMIP Miridae x 2	10									
✓HOMOP Cicadellidae 2	11									
✓ Cicadellidae 1	12									
Cicadellidae x imm. 2	13									
✓x Delphacidae 5	14									

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number North KT Site C

Sampling technique Sweep (Herb)

Species List Reference No. 83CH8

Taxonomic Information COLEOPTERA

Identifier Rick

C.11.3.4-12

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Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Chrysomelidae x 1	15									
✓ Cantharidae x 1	16									

C.11.3-4-13a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Ri. Blanco 83

Site name and number Upland Sage Site D

Sampling technique Sweep (Herb)

Species List Reference No. 83D HS

Taxonomic Information Hymenoptera

Diptera, Homo, Hemip Aran.

Identifier BCK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
HYMENOPTERA Formicidae x Tapinoma	1	C-2 5-5								
Formica x	2	A-1 B-1 5-3								
Leptothorax x	3	B-3 5-4								
Ichneumonidae X 1	4									
Pteromalidae x	5	C-6								
Pteromalidae x	6									
Encyrtidae x	7									

[illegible] PROGRESS REPORT

C. 11.3. ~1-13

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Eulophidae x	8	B-6								
DIPTERA Chloropidae x	9									
ARANEIDA Thomisidae x	10	A-3								
HOMOPTERA Psyllidae x	11	B-19								
✓ Cicadellidae x	12									
HEMIP x unknown imm.	13									
✓ [illegible] Cantharidae x	14									

C. 11.3.4-14a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Mixed brush Site 5

Sampling technique Sweep (Herb.)

Species List Reference No. 83 S H3

Taxonomic Information HYMENOPTERA, DIPTERA, LEPIDOPTERA

Identifier EEIL

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Hymenop. Formicidae Formica sp x	1									
v Formica sp x	2									
Formica sp. x	3	A-1 B-1 D-1								
Leptothorax x	4	B-2 D-2								
x Tapinoma x	5	D-1 C-2								
Braconidae x	6									
Braconidae x	7									

C.11.3.4-14b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Colletidae x	8									
✓ Encyrtidae x	9									
✓ Pteromalidae x	10									
✓ Braconidae x	11									
DIPTERA Tephritidae x	12									
Agromyzidae x ✓	13									
LEPIDOPTERA Artiidae x larvae	14									
Geometridae x larvae	15									

C.11.3.4-15a

ECI

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Mixed brush Site 5

Sampling technique Sweep (Hit)

Species List Reference No. 83 S 1/2

Taxonomic Information HEMIP, HOMOP, COLEOP

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ HEMIP Miridae	16									
HOMOP ✓ × Psyllidae	17	B-21								
✓ Cicadellidae ×	18									
✓ Cicadellidae ×	19									
✓ Delphacidae ×	20									
COLEOP ✓ Curculionidae ×	21									
✓ Curculionidae ×	22									

Q.11.3.4-75-6

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
✓ Curculionidae x	23									
unknown x/larvae	24									
✓ Erotylidae x	25									
Cleridae x	26									

C.11.3.5-1 ECI
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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco #83
Site Name & Number Greasewood-sage (Site A
Collection Date 5 June 75
Species List Ref. No. 83A B
Sampling Means Beating
Sorting Means Berlese

Species Reference Number	Sample Number 1/10	~~2~~ 111	3	4	5	6	7	8	9	10	Total
✓1	1										
✓2	1										
✓3	1										
✓4	2										
✓5	1										
✓6	1										
✓7	4	1									
✓8	1										
✓9	5	2									
✓10	1										
✓11	3	2									
✓12	1										
✓13	2	6									
✓14	1	1									
✓15	1	1									
✓16		3									
✓17		1									
✓18		1									
✓19		1									
✓20		1									
✓21		1									
22											
23											
24											
25											
26											
27	[illegible]										
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[illegible]

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83 Site Name & Number South PJ Site 2
Collection Date 5 June 75 Species List Ref. No. E3B B Piny
Sampling Means Beating Sorting Means Berlese

Species Reference Number	106	107	3	4	5	6	7	8	9	10	Total
1	3	2									
2	2	1									
3	1	2									
4	1										
5	2										
6	2	1									
7	1	1									
8	1										
9											
10		1									
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[illegible] PROGRESS REPORT

LAB ANALYSIS - INVERTEBRATES

2

Project Name & Number Rio Blanco 83

Site Name & Number South PJ Site B

Collection Date 5 June 75

Species List Ref. No. 83B B Juniper

Sampling Means Beating

Sorting Means Berlese

Species Reference Number	Sample Number 108	109	3	4	5	6	7	8	9	10	Total
✓1	12	93									
✓2	2										
✓3	2										
✓4	2										
✓5	2										
✓6	1										
✓7	1										
✓8	3										
✓9	1										
✓10	2										
✓11		1									
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on 26 sept 1975 R. Daggett

C.11.3.5-4 ECI

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco #83 Site Name & Number North PJ - Site C

Collection Date 4 June 75 Species List Ref. No. 83C-B Jun

Sampling Means Beating Sorting Means Berlese

Species Reference Number	Sample Number										Total
	104	105	3	4	5	6	7	8	9	10	
✓1	2	2									
✓2	1	1									
✓3	1										
✓4	1	1									
✓5	1	1									
✓6		2									
✓7		1									
✓8		1									
✓9		2									
10											
11											
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on 26 Sept. 1975 R. Daggett

LAB ANALYSIS - INVERTEBRATES

Project Name & Number Pt Planco 93 Site Name & Number North PT Site

Collection Date 4 June 75 Species List Ref. No. ECI P Pi[illegible]

Sampling Means Bailing (Pigeon) Sorting Means [illegible]

Species Reference Number	Sample Number										Total
	102	105	3	4	5	6	7	8	9	10	
✓1	2	1									
✓2		[illegible]									
✓3		1									
✓4		1									
✓5		1									
✓6		3									
✓7		1									
8		[illegible]									
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on 26 Sept 1975 [illegible]

C.11.3.5-6a

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco A83

Site name and number North PJ site C

Sampling technique Beating - Juniper

Species List Reference No. 83C B Junip

Taxonomic Information HEMIP, COLEOP, ACARI, ARANEIDA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ HEMIPTERA Miridae X	83C B-1	83C AS1 Jump 83B AS1 Jump 83B B1 Jump								
✓ COLEOPTERA Curculionidae X	83C B-2	83B B2 Jump								
✓ Chrysomelidae X	B6									
✓ Coccinellidae X	B7									

C. 11.3.5-66

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
ACARI	83C B3	[illegible] [illegible] 83E [illegible] 83E [illegible] [illegible] E 13								
ARANEIDA Dictynidae x	B4	83E [illegible]8-J 83C [illegible]7-F								
Thomisidae x	B5	[illegible] [illegible] 83E [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 15	83C [illegible]5-[illegible]-F							
Salticidae x	9	[illegible] [illegible]-6-J [illegible] [illegible] [illegible] [illegible] 3-J 83E [illegible]	[illegible] 83A E-15							
HYMENOPTERA Ichneumonidae x	8									

C.11.3.5-7a

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RBOSP PROGRESS REPORT

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83
Site name and number Greasewood Sage Site A
Sampling technique Beating (Sage)

Species List Reference No. 83A B
Taxonomic Information ORTHOP

Identifier Bell

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ORTHOPTERA Acrididae x /	83A B12									
ACARI x	B13.	83 C B-4-P 83 B B-4-J 83 B B-1-P 83 C B-3-J								
Lepidoptera x Super fam Pyraliloidea	B14	83 B AS 7 Sum.								
Saltiidae x	B15	[illegible] 83 C	[illegible]							

C.11.3.5-7b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Thysanoptera x	20	83A TD 28 83A AS17								
Thysanoptera x	21	83A AS18								

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.5-8

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[illegible]

Project name and number Rio Blanco #83

Site name and number Greasewood sage Site A

Sampling technique Beating (sage)

Species List Reference No. 83AB

Taxonomic Information HEMIP, HOMOP

Identifier HK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
HEMIP Miridae x	83A B7	83A AS8								
unknown x	83A B8	83A AS9								
HOMOPTERA Cicadellidae x imm	9									
Cicadellidae x imm.	10									
Aphididae X	11	[illegible]								

C.11.3.5-9a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #83

Site name and number Greasewood Sage Site A

Sampling technique Beating (sage)

Species List Reference No. 83 A B

Taxonomic Information HYMENOPTERA, COLEOP

Identifier RFK

RECSP PROGRESS REPORT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Figitidae	83A B1									
✓ Eulophidae	B2									
✓ Formicidae Leptothorax	B3				[illegible]					
✓ Formicidae Tapinoma	16	83C H51-F 83C [illegible]-F								
✓ Platygasteridae	17									

C:11.3.5-9b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
COLEOP Anthicidae x	83A B4									
✓ Curculionidae x	B5									
Unknown x	B6									
✓ Coccinellidae x	18	83A K10								
✓ Curculionidae x	19									

C.11.3-5-10a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #85
Site name and number # South PI Site B
Sampling technique Beating

Species List Reference No. 83B B Pinyon
Taxonomic Information ACARI, HYMEN, COLEOP
[illegible] HOMOP
Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ACARI x	83B B1	83 [illegible] B [illegible] 83 [illegible] B-4-1 [illegible] [illegible] 4-J 83 11 B-13								
HYMENOPTERA Formicidae x Tapinoma sessile	83B B2	83 [illegible] H-1-P 83A B-16								
Formicidae x [illegible]	B2				12 seg					
COLEOP Coccinellidae x	4									
Scolytidae x	5									

C.11.3.5-10b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
HOMOP Aphididae x	83-C B6 Pinyon	83 F C 11								
ARANEIDA Araneidae x	7	83-B A5-7-P 83 C B-5-P	83C A55-J 83D E5-J							
Salticidae x	8	83 C [illegible] 83 B F-6-5 83 [illegible] [illegible] 83 A A5 16	[illegible] A [illegible] P 83 A B-15							
Thomisidae x	9	[illegible] 83 C A54-J [illegible]	[illegible]							

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.5-11a

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Project name and number Rio Blanco 83
Site name and number South PJ Site B
Sampling technique Beating

Species List Reference No. 83B B Juniper
Taxonomic Information HEMIP, COLEO, ACARI, ARANEIDA LEPIDOPT
Identifier EEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ HEMIP x Miridae	83 B B1	83 B AS1 Junip [illegible]								
✓ COLEOPTERA Curculionidae x	B2	83 C [illegible]								
✓ Meloidae x	B11	83 C [illegible]								
[illegible] unknown x	B3 slide									

C. 11:3.5-11b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
ACARI x	83B B4 Jun.p	83C B-[illegible]-J 83C 2-4-P 833 [illegible]-1-P 83 A B-13								
ARANEIDA										
Oxiopidae x	5									
Salticidae x	6	83C [illegible]-9-J 83F [illegible]-16 [illegible] [illegible] 83B 3 Y-P	83C [illegible] 83 A B-15							
Thomisidae x	7	[illegible] [illegible] 4-J 83 P [illegible] [illegible] [illegible] 6-P [illegible] [illegible] 15 [illegible]	83 [illegible] [illegible]							
Dictynidae x	8	83 C [illegible]-4-[illegible] 83 C B-7 P								
Araneidae x	9	[illegible]								
LEPIDOPTERA x unknown	10									

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.5-12a
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Project name and number Rio Blanco 83
Site name and number North PT - Site C
Sampling technique Beating - Pinyon

Species List Reference No. 83C B Pinyon
Taxonomic Information HEMIP, HOMOP, ACARI
[illegible]
Identifier PSK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
HEMIPTERA Reduviidae X	83C B1 Pinyon									
unknown X [illegible] X	B2									
HOMOPTERA Coccoidea X	B2									

C.11.3.5-12 b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
ACARI x +	83C B4 Pinyon	83C B-3-J 83B B-4-J 83C C-1-P 83A B-12								
ARANEIDA Araneidae + x	B5	83C B-7-P 83B AS-7-P	83C AS5-J 83B PB9J							
Thomisidae x x	B6	[illegible] 87J 83B B9-P 83C AS5-J [illegible] 1-2-15 83C B-2-J	[illegible]							
Dictynidae x x	B7	83C B-4-J 83C B-9-J								

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83

Site Name & Number Site A Greasewood-sage

Collection Date 5 June 75

Species List Ref. No. 83A As

Sampling Means Aerial sweeps from Sage

Sorting Means Hand

Species Reference Number	Sample Number 97 ~~1~~	2	3	4	5	6	7	8	9	10	Total
1	4										
2	1										
3	1										
4	1										
5	1										
6	1										
7	2										
8	55										
9	3										
10	3										
11	1										
12	2										
13	2										
14	1										
15	2										
16	3										
17	12										
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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83 Site Name & Number Smith PJ Site B

Collection Date 5 June 75 Species List Ref. No. 83B AS Pin

Sampling Means Aerial sweeps (Pinyon) Sorting Means Hand

Species Reference Number	Sample Number 198	2	3	4	5	6	7	8	9	10	Total
✓1	1										
✓2	1										
✓3	1										
✓4	1										
✓5	1										
✓6	1										
✓7	1										
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C.11.3.6-3 ECI
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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83
Site Name & Number South PJ Site B
Collection Date 5 June 75
Species List Ref. No. 83 B AS juniper
Sampling Means Aerial Sweeps (Juniper)
Sorting Means Hand

Species Reference Number	Sample Number										
	~~1~~ 99	2	3	4	5	6	7	8	9	10	Tot
✓ 1	74										
✓ 2	1										
✓ 3	1										
✓ 4	1										
✓ 5	1										
✓ 6	1										
✓ 7	1										
✓ 8	5										
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C.11.3.6-4/

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number [illegible]

Site Name & Number [illegible]

Collection Date [illegible]

Species List Ref. No. [illegible]

Sampling Means [illegible] Pinyon

Sorting Means [illegible]

Species Reference Number	Sample Number										Total
	100	2	3	4	5	6	7	8	9	10	
✓ 1	2										
✓ 2	1										
✓ 3	1										
4	[illegible]										
5											
6											
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[illegible]

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LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83

Site Name & Number North PJ Site C

Collection Date 4 June 75

Species List Ref. No. 83C PJ Junip

Sampling Means Aerial sweep

Sorting Means Hand

Species Reference Number	Sample Number										Total
	101	2	3	4	5	6	7	8	9	10	
✓1	12										
✓2	1										
✓3	3										
✓4	2										
✓5	1										
✓6	1										
7											
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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.6-6a

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Project name and number Rio Blanco #83
Site name and number Greasewood-sage (Site A)
Sampling technique Aerial swp (sage)

Species List Reference No. 83AAS
Taxonomic Information Homop Hemip COLEOP
Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓Homo. Psyllidae X	83A AS7		~3.0	pale						
HEMIP X Miridae imm	83A AS8	83A B7	✓	yllw & brn						
X unknown imm	AS9	83A B-8	✓	rd & brn						

C.11.3.6-66

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
COLEOP ✓ Coccinellidae x	10	83A B-18								
✓ x Chrysomelidae flea beetle	11									

C.11.3.6-7a
ECI
ecology consultants, inc.

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Greasewood · Sage Site A
Sampling technique Aerial swp-sage
Species List Reference No. 83A-AS
Taxonomic Information DIPTERA, THYSANOPTERA, ARANEIDA
Identifier EJC

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ DIPTERA Agromyzidae X	12				post-verts diverging				anal cell present Costa broken at R_1	
✓ Agromyzidae X	13	83 B AS-? [illegible]			"				"	
✓ Chironomidae X	14									

C.11.3:6-76

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
~~Araneidae~~ ✓ Thomisidae x	15	[illegible]	[illegible] HS [illegible]							
Saltícidae x	16	[illegible] 83E B-8-F	83 [illegible] [illegible] 83A B-15							
THYSANOPTERA x	17	83A TD2B								
THYSANOPTERA x	18 Slide									

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.6-8

ECI
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Project name and number Rio Blanco 83

Site name and number Greasewood · Sage Site A

Sampling technique Aerial sweeps (sage)

Species List Reference No. 83A AS

Taxonomic Information Hymenoptera

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ Braconidae x	83A AS 1	8	2.0-3.0	Blk & Brn						
✓ Braconidae x	AS 2		3.6	1° blk						
✓ Ichneumonidae x	AS 3		6.0- 7.0	blk w/ orange abdomen						
Pteromalidae x	AS 4		1.6	met grn						
Pteromalidae x	AS 5		1.0	blk & brn						
Pteromalidae x	AS 6		2.5	blk all						

C.11.3.6-9a
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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco #03
Site name and number South RT # Site B
Sampling technique Aerial svps (Pinyon)

Species List Reference No. 83B AS Pin
Taxonomic Information HEMIPTERA

Identifier RLK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ HEMIPTERA x Miridae imm	83 B AS 1									
✓ COLEOPTERA Curculionidae x	83 B AS 2									
✓ Melcidae x	AS 3	83 B B 11								
✓ Cocinellidae x.	AS4									

C.11.3:6-96

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
✓HYMENOPTERA Braconidae X	83B A5S									
✓DIPTERA Anthomyiidae x	A56									
✓ ARANEIDA Araneidae x	7	83 B B-7-P 83C B5-P	83C A5-5 83B B9-5							

C.11.3.6-10a

ECI

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number South PJ Site B

Sampling technique Aerial Swp (Juniper)

Species List Reference No. 83 B AS juniper

Taxonomic Information HEMIPTERA, DIPTERA, HYMENOPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
✓ HEMIPTERA X Miridae nymph	83B AS 1	8[illegible] P1 [illegible] 83C [illegible] 83C AS 1[illegible]								
✓ DIPTERA Asilidae X	AS 2									
✓ Agromyzidae X	AS 3	83A AS 1[illegible]								

C. 71.3.6-10b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
✓ ~~HYMENOPTERA~~ Formicidae X Formica sp.	83B AS 4									
✓ Eulophidae X	AS 5									
✓ Eulophidae X	AS 6									
LEPIDOPTERA X Pyralidoidea	AS 7	83A B-14								
COLLEMBOLA Sminthuridae X	AS8									

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.6-11

ecology consultants, inc.

Project name and number Rio Blanco

Site name and number North PJ Site C

Sampling technique Aerial traps [illegible]

Species List Reference No. 83C AS Pinyon

Taxonomic Information

Identifier [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
HYMENOPTERA Formicidae TAPINOMA x	83C AS1 Pinyon	83 C [illegible] 83 A B-16								
ARANEIDA Salticidae x	AS2	[illegible] [illegible] 83 A [illegible] 83 [illegible] [illegible] 83 B [illegible]	83 C 115 3-5 83 A B-15							
Thomisidae x	AS3	83 B [illegible]	83 B B-4-7							

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.6-12a

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[illegible]

Project name and number Rio Blanco 83

Site name and number North PJ Site C

Sampling technique Aerial swp Junip

Species List Reference No. 83C AS Junip

Taxonomic Information HEMIP

Identifier Bell

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
HEMIP X Miridae Imm	83C AS1	83b AS1 Junip 83GB1 Junip 82C E-1-J								
DIPTERA X Tephritidae	83C AS2									

C.11.3.6-12b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
ARANEIDA Salticidae x	83C A3	[illegible]	[illegible]							
Thomisidae ✓	AS4	[illegible]	[illegible]							
Araneidae ✓	AS5	[illegible]								
unknown x	AS6									

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LAB ANALYSIS - INVERTEBRATES

no sample [illegible] sample #31

Project Name & Number Rio Blanco 83 Site Name & Number Site A

Collection Date June [illegible] 1975 Species List Ref. No. 83A H

Sampling Means Malaise Trap Sorting Means ——

Species Reference Number	Sample 1#31	2 71	117 ¼35	× 4	¼ 47		5	6	7	8	9	10	Total
1	27	25	25	100	7	28							180
2	1	1											2
3	16	19	7	28	5	20							83
4	65	94	20	80	9	36							275
5	4	2											6
6	15	8	2	8	3	12							43
7	12	16	19	76	3	12							116
8	9	26	8	32	6	24							91
9	3												3
10	2												2
11	4	1	2	8									13
12	5	9	4	16	3	12							42
13	1												1
14	1	2	1	4									7
15	3	7			2	8							18
16	4	5	1	4									13
17	4		1	4	1	4							12
18	1	5 m											[illegible]
19	2	1	1	4									7
20	1												1
21	1	3	2	8	3	12							24
22	1												1
23	34	48	7	28	3	12							122
24	29	20	4	16	14	56							121
25	3		2	8									11
26	1												1
27	12	[illegible]	4	16									36
28	3	13	2	8									24
29	3	4	1	4	3	12							23
30	4	2	2	8									14
31	6	5	12	48									59
32	1												1
33	2		1	4									6
34	4	2	1	4									2
35	2	1											3
36	1	1	3	12	3	12							18
37	1												1
38	1												1
39	37		10	40	7	28							15
40	7	1	1	4									12

1512

C 11.3.7-2

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Page 2 of 3

Project 83 Site Site A Sp.list ref. no. 83AM Date 4 June 75

	31	71	117		57		
441	6	36	12	48	22	88	178.
42	3	13	13	52	6	24	92.
43	2	2			1	4	8
44	1		1	4			5.
45	30	55	57	228			313.
46	11				140	560	571.
47	1		2	8	4	16	25.
48	5	9	6	24			38.
49	1						1.
450	1				3	12	13.
4 1	2	3	5	20			26.
42	1		4	16	1	4	21.
43	2						2.
44	1						1.
45	1						1.
46	1						1
47	17	2			3	12	31
48	1	2					3
9	1						1.
60	1	1			2	8	10,
41	1.	12			10	40	53.
2	5				1	4	9
3		1	2	8	1	4	13
4		5	1	4	15	60	69.
5		1	1	4			5
6		8			5	20	28
7		2					2
8		1			1	4	5.
49		1					1.
470		1					1.
1		1					1.
2		1					1.
3		1					1.
4		1					1.
5		1					1.
6		1			2	8	9.
47		1					1.
8		1					1.
9		1					1.
60		2	2	8	4	16	26
1		1					1.
2		1					1.
3		1			1	4	5
4		1					1.
5		1					1
6		1					1.
7		1					1.
8		8			1	4	12
9		1	1	4			5
10		2	2	8	3	12	22.
	419		21		21		1620

C.11.3.7-3 ECI

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Page 3 of 3

Project 83 Site Site A Sp.list ref. no. 83AM Date June 1975

Ichneumon or
eromel. ?, x2

	31	71	4 117 55	57							Totals
91											
2		1									1
3		1									1
4		1		1 4							5
5			1 4								4
6			2 8								8
7			1 4	3 8							12
8			1 4								4
9			1 4								4
00			2 8								8
1			1 4								4
2			1 4								4
3			1 4								4
4			1 4								4
5			2 8	1 4							12
6				1 4							4
7				1 4							4
8				3 12							12
9				4							4
0				1 4							4
1				1 4							4
2				1 4							4
3				1 4							4
4				1 4							4
5				1 4							4
6											
7											
8											
9											
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
0											

3255

C.11.3.7-4 (ECI)

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Sample no. 32

LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83

Site Name & Number site B

Collection Date June 2, 1975

Species List Ref. No. 83B M-

Sampling Means Malaise

Sorting Means hand

Species Reference Number	32 1	72 2	+4 1/4 ss 118 3	+4 1/4 ss 148 4	5	6	7	8	9	10	Total
✓ 1	44		3 12	7 28							84
✓ 2	4										4
✓ 3	1										1
✓ 4	1		4 16	1 4							21
✓ 5	1										1
✓ 6	1										1
✓ 7	3										3
✓ 8	1		1 4								5
✓ 9	1		1 4								5
✓ 10	2										2
✓ 11	1		3 12								13
✓ 12	11		9 36	12 48							95
✓ 13	6										6
✓ 14	3										3
✓ 15	2										2
✓ 16	6										6
✓ 17	17		10 40	7 28							85
✓ 18	2										2
✓ 19	16		3 12	2 8							36
✓ 20	1		1 4	1 4							9
✓ 21	4			1 4							8
✓ 22	4										4
✓ 23	1										1
✓ 24	1										1
✓ 25	3		3 12	1 4							19
✓ 26	1			1 4							5
✓ 27	1		2 8								9
✓ 28	1										1
✓ 29	1		4 16								17
✓ 30	1		1 4								5
✓ 31	1		4 16								17
✓ 32	1										1
✓ 33	3										3
✓ 34	1										1
✓ 35	1			3 12							13
✓ 36	1		1 4								5
✓ 37	1										1
✓ 38	39		2 8								47
✓ 39	1			1 4							5
✓ 40	2		3 12	14 56							70

621

C.11.3.7-5 ECI
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Page 2 of 2

Project 83 Site ½ss. B ½ss Sp.list ref. no. 83BH Date 2 June 75

	32	72		118		½ss 148					
✓ 41			1	4	5	20					24
✓ 2			12	48	7	28					76
✓ 3			11	44	11	44					88
✓ 4			2	8	2	8					16
✓ 5			3	12	1	4					16
✓ 6					1	4					4
✓ 7			4	16	11	44					60
✓ 8					2	8					8
✓ 9					1	4					4
✓ 50					1	4					4
✓ 1					1	4					4
✓ 2					1	4					4
✓ 3					1	4					4
✓ 4			2	8	2	8					16
✓ 5					1	4					4
✓ 6					1	4					4
✓ 7			1	4							4
✓ 8			1	4							4
✓ 9			1	4							4
✓ 60			1	4							4
✓ 1			1	4							4
✓ 2			1	4							4
✓ 3			1	4							4
✓ 4			1	4							4
✓ 5			2	8							8
✓ 6			2	8							8
✓ 7			2	8							8
✓ 8			2	8							8
✓ 9			3	12							12
✓ 70			1	4							4
✓ 1			1	4							4
✓ 2			2	8							8
✓ 3			1	4							4
✓ 4			1	4							4
✓ 5			1	4							4
✓ 6			4	16							16
7											
8											
9											
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
0											

C.11.3.7-6 ECI

LAB ANALYSIS - INVERTEBRATES

Project Name & Number Rio Blanco 83 Site Name & Number North PJ Site C

Collection Date May-June 1975 Species List Ref. No. 83C M

Sampling Means Malaise Sorting Means Hand

A BEIC, Denise Boschen

Species Reference Number	¼ ss	34 1	73 2	119 3	149 Sample Number 4	5	6	7	8	9	10	Total
✓ 1	3	12										
✓ 2	1	4										
✓ 3	1	4	12									
✓ 4	1	4										
✓ 5	3	12										
✓ 6	2	8										
✓ 7	1	4										
✓ 8	2	8										
✓ 9	1	4										
✓ 10	1	4										
✓ 11	2	8										
✓ 12	1	4										
✓ 13	2	8										
✓ 14	2	8	[illegible]									
✓ 15	2	8										
✓ 16	2	8										
✓ 17	1	4										
✓ 18	1	4										
✓ 19	1	4	16									
✓ 20	1	4										
✓ 21	3	12										
✓ 22	1	4										
✓ 23	8	32										
✓ 24	2	8										
✓ 25	1	4										
✓ 26	1	4										
✓ 27	2	8										
✓ 28	15	60										
✓ 29	7	28										
✓ 30	9	36										
x 31	9	36										
x 32	9	36										
x 33	9	36										
✓ 34	2	8										
✓ 35	3	12										
✓ 36	1	4										
✓ 37	4	16										
38												
39												
40												

468

C.11.3.7-7 (ECI)
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LAB ANALYSIS - INVERTEBRATES

Project Name & Number [illegible] Rio Blanco

Site Name & Number SITE D

Collection Date JUNE

Species List Ref. No. 83 1 M

Sampling Means MALAISE TRAP

Sorting Means —

Species Reference Number	Y4 S335		275	Y4 S3 B121		4	5	6	7	8	9	10	Total
✓ 1	4	16		3	12								28
✓ 2	3	12		2	8								20
✓ 3	1	4											4
✓ 4	1	4		2	8								12
✓ 5	1	4											4
✓ 6	1	4											4
✓ 7	1	4											4
✓ 8	1	4											4
x 9	1	4											4
✓ 10	2	8		1	4								12
✓ 11	1	4											4
✓ 12	1	4											4
✓ 13	1	4											4
✓ 14	2	8											8
✓ 15	3	12		14	56								[illegible]
✓ 16	1	4											4
✓ 17	[illegible]	[illegible]		18	72								[illegible]
✓ 18	4	16		8	32								48
✓ 19	5	20		4	16								36
✓ 20	15	60		5	20								[illegible]
✓ 21	11	44		12	48								92
✓ 22				2	8								8
✓ 23				1	4								4
✓ 24				1	4								4
✓ 25				1	4								4
✓ 26				1	4								4
✓ 27				1	4								4
✓ 28				1	4								4
✓ 29				1	4								4
✓ 30				1	4								4
✓ 31				1	4								4
✓ 32				1	4								4
✓ 33				1	4								4
✓ 34				1	4								4
35													
36													
37													
38													
39													
40													

57

1.6

.2679

C.11.3.7-5 ECI
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LAB ANALYSIS - INVERTEBRATES

Project Name & Number 83 Rio Blanco

Site Name & Number Site 5

Collection Date June '75

Species List Ref. No. 83 - 11

Sampling Means Malaise Trap

Sorting Means ——

Species Reference Number	Sample Number										Total
	1/4 ss x.33	2	3	4	5	6	7	8	9	10	
✓ 1	1 4										
✓ 2	7 28										
✓ 3	1 4										
✓ 4	3 12										
✓ 5	1 4										
✓ 6	1 4										
✓ 7	2 8										
✓ 8	1 4										
✓ 9	1 4										
✓ 10	1 4										
✓ 11	2 8										
✓ 12	1 4										
✓ 13	1 4										
✓ 14	[illegible] 42										
✓ 15	[illegible] 16										
✓ 16	8 32										
✓ 17	7 28										
✓ 18	1 4										
✓ 19	1 4										
✓ 20	1 4										
✓ 21	1 4										
✓ 22	1 4										
✓ 23	1 4										
✓ 24	1 4										
✓ 25	3 12										
✓ 26	1 4										
✓ 27	8 32										
✓ 28	2 8										
✓ 29	1 4										
✓ 30	1 4										
✓ 31	1 4										
32											
33											
34											
35											
36											
37											
38											
39											
40											

(400)

C. 11.3.7- 9

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[illegible] REPORT

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site A
Sampling technique Malaise
Species List Reference No. 83A M
Taxonomic Information Hymenoptera
Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Ichneumonidae	83A M98		3.0		17 seg 1/3 - 1/2	blk	brn			
Ichneumonidae	M99		4.0		28 seg E bdy lng				all veins white	
Ichneumonidae	M100		7.0		33 seg 3/4 - 1		ovipos -> bdy lng			

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.7-10a

ECI ecology consultants, inc.

Project name and number Rio Blanco [illegible]

Site name and number Site A

Sampling technique [illegible]

Species List Reference No. M 83AM

Taxonomic Information Hymenoptera

Identifier Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Platygasteridae \ x 1	M33		2.5	black shiny	ant elbowed 10 seg	[illegible] △ in profile	long, tapering	yellow	no venation	
Cynipidae \ x	M36		1.2	blk.-brown shiny	ant. 13 seg.	raised oval elevation [illegible]	2nd tergum long	yellow		
Diapriidae \ x 4	101		3.0		ant 14seg shelf		ovipos apical			
Eulophidae \ x	M37		1.5	dark metallic	ant elbowed [illegible]	[illegible]	shiny	yellow with blk. femurs		
Eulophidae \ x 3	M35		1.6	[illegible]	[illegible]		[illegible]	[illegible]		
Eulophidae \ x 1	M78		1.7	dark met	ant 7seg segments 3,4,5 w/ long ext [illegible]					
Chalcididae \ \ \	M56 M71							enlarged hind femur		

C. 11.3.7-1

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Encyrtidae / x 1	83A H79		3.3	drk						
Encyrtidae / x 4	102		1.2	drn grn				yllw		
Pteromalidae /. x 2	83A 1180		♀ 3.0 ♂ 3.0	met grn dark	large ant 12 seg semi clubbed small 12 seg					
PTEROMALIDAE / x x	83A M109		1.2				SQUARED OFF IN END			
PTEROMALIDAE / x 3	83A M110		2.4	BLK	RED EYES					
PROCTOTRUPIDAE ' x 2	83A M111									

C.11.3.7-11a

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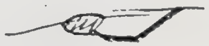
TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number [illegible] #[illegible]
Site name and number SiteA
Sampling technique Malaise
Species List Reference No. 53AM
Taxonomic Information Hymenoptera
Identifier [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Ichneumonidae X 13	53A H63		14	rd						
Ichneumonidae X 51	H63		2.5-3.0	[illegible]	blk 22 seg 2/3	[illegible]	[illegible]	lite brn		
Ichneumonidae 5 X	H65		13.0	blk				rd		
Ichneumonidae X 7	76		11.0	blk & orange	black		orange	femur orange rest - blk		
Braconidae X 12	96		3.0		22 seg 2/3 bdy lng blk hd w/ lite [illegible]	blk	dk dorsal, vent; lite lat.	dk femur		
Braconidae	97		3.0		~ 20 seg bdy lng shiny blk	shiny blk	1st lite	yellow brn		
Braconidae 9 X.	68		4.0	[illegible]					white stigma	

C.11.3.7-11

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Colletidae	83A M73		14	met blue gray pub	1 sub ant suture				2 submarg cells	
					blk clyp- yllw	blk, yllw pub	orange w blk dorsal bands			
Halictidae X 4	M94		9-10	bright met grn						
Andrenidae x 1	M74									
Vespidae 1 X	75		18		ant · yllw		long ped-blk			
Vespidae 3	95		19		ant blk		ped short			

C.11.3.7-12

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site A
Sampling technique Malaise
Species List Reference No. M 834 M
Taxonomic Information Hymenoptera
Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Halictidae X	M27		6-8	blk. with yellow pubesc.	ant. 12 seg			brown to black		
Halictidae X	M28		5	blk. (slightly metallic) & brown	slightly metallic	slightly metallic	brown			similar to M27 but: smaller, not as pubescent and slightly metallic
~~Apidae~~ Colletidae	M69		5.5	blk & orange	blk	blk	orange		3 submarg cells Jugal lobe in hind wing longer than [illegible] cell	
~~Apidae~~ Halictidae X	M70		9.0	blk w/ [illegible]	blk heavy y[illegible]	pub	blk w/ white bands on ea seg [illegible]ally		"	
Sphecidae X	M32		1[illegible]	[illegible]	blk [illegible]	blk [illegible]	[illegible]	blk.	brown	
Apidae X	M71		16		heavy yllw pub	heavy yllw pub	1st 2 seg - yllw pub 2nd 2 - blk "			
Apidae	M72		16			[illegible] pub	1st seg w/ band of [illegible], rest [illegible] bare			

C.11.3.7-

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Ichneumonidae	M29		12	light brown	ant >20 seg	darker, brown pattern on thorax dorsally		light brown		
Ichneumonidae	M30		6	blk.	ant >20 seg.		ovipos - short	legs banded with white black + brown		
Ichnemonidae	M31		4	blk. & brown	ant 25 seg 2/3 bdy lng		light with dk brown sclerite.	brown & blk.		
Ichneumonidae	M38		3.5	blk. [illegible]	[illegible] blk. 1/2 bdy lng	blk.	dk. [illegible]	light brown		
Braconidae	M50		1.5	blk. & brown	[illegible]	[illegible]	[illegible]	brown		
Braconidae	M34		2.5	Blk & brown	blk [illegible] seg.	blk.	brown blk sclerite tergally and sternally.	brown		
Braconidae	64		3.0	[illegible]			[illegible]	brn		
Braconidae	7									

C.11.3.7-13a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site A

Sampling technique Malaise

Species List Reference No. ~~M~~ 83AM

Taxonomic Information Diptera

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Chloropidae X 11	M25		3	blk.	blk.	blk., finely punctate	blk. [illegible] dorsally. Light ventrally	blk., with yellow tarsi		
Chironomidae \X 8	M 43			light brown	no ocelli eyes narrowed but do not meet	lg. brn scle[illegible] ventrally [illegible]	[illegible]	light brn. with dk brown spots	wings patterned with brown	
~~[illegible]~~ 96 X Cecidiomyiidae	M 39		2-2.5	[illegible]	[illegible]	[illegible]		[illegible]		
~~Chironomidae~~ 193 Cecidiomyiidae x	M41		2	light brown with red [illegible]	no ocelli eyes meet in narrow [illegible] head	[illegible]	red	legs [illegible] white		
Chironomidae \ X 92	M42		2	light [illegible] yellow [illegible]	[illegible] ocelli eyes don't meet above head	large brown sclerite ventrally, Dorsal pattern ↓				
Psychodidae 12 X	44		2	[illegible]	[illegible]	[illegible]	[illegible]		costa [illegible] X [illegible]	
Tipulidae 1 x	M26			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		

C.11.3.7-1

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Mycetophilidae [illegible]	M44			blk	[illegible]		[illegible]	apical [illegible] legs coxae enlarged blk + yellow		
Chironomidae [illegible]	M45		2	dk. brown	[illegible]		brown dorsally light ventrally except for tip	brown		
Chironomidae [illegible]	M46		2.5	blk. & brown	[illegible]	dk. brown	lgt. brown, [illegible] ventrally	brown		
				red brown	eyes blk [illegible]	dk [illegible]	light red-brn with dk. brown sclerites			
Sciaridae [illegible]	M47		3	blk. & brown	black, eyes [illegible]	black	brown [illegible] tip,	[illegible]		
Sciaridae [illegible]	M48		2.[illegible]	brown	[illegible]	dk brown	[illegible]	brown		
Cecidomyiidae [illegible]	M49		1	[illegible]	[illegible]				[illegible]	[illegible]

C.11.3.7-14a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site A
Sampling technique Malaise

Species List Reference No. 83AM
Taxonomic Information Diptera
Identifier Sue Tucker

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Syrphidae	M-1		8-9	black with whitish yellow	white face with black between eyes and on frons no head bristles	black	black with white markings dorsally, orange ventrally flattened dorso[illegible]	yellow with black femurs	spurious vein crossing r-m between R4+5	
Syrphidae	M-2		14.5		white face with black frons. Eyes meet above head	black	black with white markings, same as M-1 black ventrally	yellow with black femurs	"	similar to M-1 but larger, eyes meet above head
Syrphidae	M16		8	black with orange ventrally	black	black	black dorsally, orange ventrally	black with yellow		
Calliphoridae	M-3		7-1[illegible]	metallic [illegible]	blk with [illegible]	[illegible]		black		
Tachinidae	M 18		8	black with orange tip	blk	blk. with long. lat. light gray stripes	blk with orange tip	blk.		similar to M-14 but larger
Tachinidae	M-15		11-12	black with yellow head	head yellow	black with variable orange marking	black with variable orange markings.	black		
Tachinidae	M14		5	black [illegible] tip			orange tip	blk.		

C.11.3.7-15a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number [illegible]

Site name and number [illegible]

Sampling technique [illegible]

Species List Reference No. [illegible] M

Taxonomic Information Diptera

Identifier [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Pipunculidae [illegible]	M-7		3	blk.	eye red [illegible] head			blk, yellow tarsi		
Dolichopodidae [illegible]	M13		5	met. green		smooth, shining		yellow with blk.		
Asilidae [illegible]	M93		11.0	drk				clear; w/ drk veins		
unknown X [illegible]	M62		3							
Asilidae [illegible]	M19		11	blk hairy				blk, hairy	fringed with brown spots	
Phoridae [illegible]	M-6		1.5	[illegible]				hind [illegible] [illegible] [illegible]		

C.11.3.7-15b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Therevidae	M-11		6	dk. brown	eyes meeting above head		tapering		5 posterior cells	
Muscidae	M17		7.5	blk.						
~~Muscidae~~ Anthomyiidae	M22	M104	5	blk. with yellow	yellow with black ocellar area	blk.		yellow & brown		
Otitidae	M20		6.5	blk. & gold	gold			gold	banded.	
Bibionidae	M 103		9.0	blk				yllw		
Bibionidae	M24		8	black	[illegible]		[illegible]	[illegible]		

C.11.3.7-16

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site A

Sampling technique Malaise

Species List Reference No. 83AM-

Taxonomic Information Diptera

Identifier KEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Anthomyiidae 12 X	83A M104		5.0	♂ front orange → back grey →		grey	grey	yllwbrn	veins [illegible]	
Sepsidae	M113									
Tephritidae 4	M114									

C.11.3 7-17

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

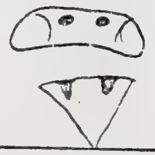
Site name and number Site A

Sampling technique Malaise

Species List Reference No. 83AM

Taxonomic Information HoMoP

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Delphacidae x 1	83A M 85		1.3	crm & brn					veins - brn & white brn splotches	dot
Cicadellidae x x	86		3.0	yllw						
Cicaellidae x 1	87		4.5							
Cicadellidae x 13	88		4.0				brn			
CICADELLIDAE x 13	m. 107		4.0	BRN	PINK EYES					THICK SOLIED
CICADELLIDAE x 4	m 109		2.1	WHITE w/ brn STRIPE [illegible]						

C.11.3.7-18

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Ric Blanco [illegible]
Site name and number Site A
Sampling technique MALAISE

Species List Reference No. M [illegible] AM
Taxonomic Information Hemiptera, Homoptera
[illegible]
Identifier Sue Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Miridae X 31	57		2	yellow	eyes pink			light with blk. speckles		
Pentatomidae 1	82			Large	green stinkbug					
Lygaeidae 5	83									
Aphididae 3	M56		1	brown	eyes [illegible]					
Membracidae 1	M59		4,5	[illegible]	[illegible]	[illegible]		[illegible] with blk femurs		
Psyllidae 10	M6		2	[illegible]	[illegible]				[illegible] brn. speckled	
Psyllidae 1	H34		2	lite brn					brn splotches on wings	

C.11.37-12b

RECORD PROCESSING REPORT

LEPIDOPTERA

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Lepidoptera adult moth 53	M61 slide		6	brown						
Hesperidae x \ /	M81									

C.11.3.7-19

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site A

Sampling technique Malaise

Species List Reference No. 83AM

Taxonomic Information Coleoptera

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Coccinellidae X 26	MS1		4	blk, orange & white	[illegible] 					
Curculionidae X 21	MS2		2	blk [illegible]	snout long eye overlapped by pronotum			brown		body compact
Anthicidae X 22	M90									
X Tenebrionidae [illegible] ? [illegible] 2	MS3		4-6	light [illegible]	[illegible]	2 hornlike [illegible]	brown [illegible] blk [illegible]			♂
Cleridae X 1	MS4		4	[illegible]	head [illegible]	[illegible]		[illegible]		
Lampyridae X 1	MS5		6	blk [illegible]	blk [illegible]	[illegible]	blk	blk	parallel [illegible]	
Lathridiidae X 1	MS6		[illegible]	[illegible]					[illegible]	

C.11.37-19

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Coccinellidae X 5	83A 489			Hippodamia convergens						
Staphylinidae x 1	M91									
STAPHYLINIDAE x 4	M105		2.3							
CURCULIONIDAE x 4	M106		6.4	RED/[illegible]			[illegible] [illegible]			

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C. 11.3.7-20

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Project and number Rio Blanco #83

Site name and number Site A

Sampling technique Malaise

Species List Reference No. 83A M

Taxonomic Information NEUROPTERA

PSOCOPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
NEUROPTERA Hemerobiidae	831 1492									
PSOCOPTERA TROGIIDAE 4	82 A m 112									

C.11.3.7-2/a

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site B
Sampling technique Malaise
Species List Reference No. 83B M
Taxonomic Information Lepidoptera, Coleop, HEMIP
Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
moth X	M17		11 var	brown						
moth X	M18		25	brown						
moth Y	M47		√ small							
HEMIP NYMPH ?	M 70									

C.11.3.7-21b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Chrysomelidae ✓	533 M51									
Ostomidae ✓	M52									
Cantharidae ✓	M53									
COCCINELLIDAE ✓	M57									
CLERIDAE ✓	M71		4.5	MET GRN						
Scydmaenidae ✓	M72		3.3	RED BRN						
CHRYSOMELIDAE ✓	M73		3.1	BLK BRN	BLK	BLK	BRN			
CHRYSOMELIDAE ✓	M74		3.2	CREAM w/BRN MARKINGS						

C.11.3.7-22

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site B

Sampling technique Malaise

Species List Reference No. 83 B M

Taxonomic Information Homop. Neurop

Identifier PEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Psyllidae X	83 B M54			yllw						
Psyllidae X	83 B M55			brn					brn splotched	
CICCADELLIDAE X	83 B M 6[illegible]		2	YELLOW		WHITE ON PROTHORAX X				
CICCADELLIDAE X	[illegible] M69		2.8	LT BRN	ORANGE STRIPES ///				ORANGE STRIPES ///	

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	C.11:3.7 -22 Other
Neuroptera										
Hemerobiidae	638 M56									

C.11.3.7-23a

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

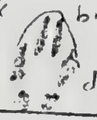
Project name and number Rio Blanco 83
Site name and number Site B
Sampling technique Malaise

Species List Reference No. 83 B-M
Taxonomic Information Diptera

Identifier Sue Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Heleomyzidae X	M 15		4	yellow	oral vibrissae present		[illegible] brown	yellow	with brown spots [illegible] spinose	
Therevidae X	M16		3.5	blk.	eyes meet above head		tapering			
SCIARIDAE X	M66		3.8	DK BRN				YELLOW		
Anthomyiidae X	M20		5	[illegible]	eyes					same as 83A M8
Tachinidae X	M21		3.5	blk.			blk. sometime apparently blk. [illegible] with distended			
Pipunculidae X	M45									
Simulidae X	M46									

C.11.3.7-23b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Sciaridae X	M 38		3	brown	small ocelli present, eyes meet above	dk brown	brownish orange tapering	brown		
Mycetophilidae X	83E M 41		3.0	brn						
Sciaridae X	M 40		2.5	brown	small, no ocelli ant. 15 seg	no median furrow on metanotum		white, hind legs longest		
Cecidiomyiidae X	M 42		2.5-3.0							
Phoridae Y	M 44			brn						
Chironomidae Y	M39		3	light brown	eyes not [illegible] but [illegible]	light with dk brown sclerites dorsally 		light, long with brown spots	with brown patterning	Same as 83A M 43
Chironomidae	M43									
SCIARIDAE	[illegible]	67	[illegible]	DK [illegible]						

C.11.3.7-2Na

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number Site B
Sampling technique Malaise
Species List Reference No. 83B M
Taxonomic Information Diptera
Identifier Sue Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Chamaemyiidae x	M1		2-3	blk. & brown		blk. with 3 faint blue-grey stripes longitudinelly	light with brown sclerites dorselly.	blk. with yellow		same as 83A M24
Therevidae x	M13		4	blk. w/blk & white abdomen	face		blk. & white	blk, long & slender		
Asilidae ✓	M2		11	blk. with [illegible] hairs				blk. with brown tarsi		
Asilidae x	M3		10	blk [illegible]				blk	with brown [illegible] on wings	same as 83A M19
Syrphidae x	M4	83AM10	7	blk & yellow		blk., shiny	blk & yellow	yellow with [illegible]		
Syrphidae x	M5		7	blk. with [illegible]		blk., shiny	blk [illegible]	yellow		
Syrphidae x	M10	83AM9	6-7	blk. with [illegible] yellow	[illegible]	[illegible]	blk. with [illegible]	yellow w/blk. [illegible]		same as 83A M-1

C.11.3.7-24

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Sciomyzidae X	M6		7.5	brown & yellow	Face yellow	blk	dk. brown dorsally, yellowish-brown ventrally [illegible]	brown & yellow Femora with bristles	R1 ending at middle of wing. Each with a basal spot	
Tachinidae X	M7		9	blk with orange tip			blk. bristly with orange tip	blk.		same as E3A M-18
Tachinidae X	M8		11	blk. with yellow head	yellow	blk scutellum gold	blk. with variable orange markings	blk.		same as 83A M-15
Tachinidae X	M11		5	blk. with yellow face	yellow face but blk. between eyes			blk		
Anthomyiidae X	M9		7.5	blk.				puvillae large blk.		
Anthomyiidae X	M12		4.5	blk with yellow face	yellow face	blk.	dk. brown lighter ventrally	yellow with blk.		
Tachinidae X	M14		3.5 - 5	[illegible]				blk.		
Anthomyiidae X	M19		5	[illegible]	[illegible]		[illegible]	blk.		same as 83A M4

C.11.3.7-25

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site B

Sampling technique Malaise

Species List Reference No. 83 B M

Taxonomic Information DIPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Trixoscelididae	83B M76									

C.11.3.7-26

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Site B

Sampling technique Malaise

Species List Reference No. 83B M

Taxonomic Information Hymenoptera

Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Eulophidae X	M 34		2	met. blue	ant. branched			yellow + met. green		
Eulophidae X	M35		2	met. + brown	ant. yellow head met.	head met.	brown	yellow		
EULOPHILAE X	M64		1.8	DK BRN	ANT BRANCHED					
Hymaridae X	M 48									
Pteromalidae X	M49									
Pteromalidae X	M 51									
EULOPHIDAE X	M65		1-1.5	BRN [illegible]						

[illegible] C.11.3 7-

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
FORMICIDAE TAPINOMMA X	83 B M 52			BRN			1 SEG PETIOLE			
TENTHREDINIDAE X	83 E M75		4	ORANGE						
ICHNEUMONIDAE X	M 59		14	BLK/RED	BLK	BLK	RED	BLK/RED		
BRACONIDAE X	M 61		10	DK BRN				BRN & YELLOW	YELLOW VEINS	
BRACONIDAE X	M 62		3.6	DK. RED						
BRACONIDAE	M63		2.5	BLK/BRN	BLK	BLK	BRN	YELLOW		

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.7-27

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Project name and number Rio Blanco 83
Site name and number Site B
Sampling technique malaise
Species List Reference No. 83B M
Taxonomic Information Hymenoptera
Identifier S. Taylor

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Ichneumonidae x	M22		12	light brown	ant. >20 seg.	darker brown pattern on thorax dorsally.		light brown		same as 83 A M29
Ichneumonidae x	M23		6.5	reddish brown	ant. 27			reddish-brown	smoky	
Ichneumonidae x	M25		6	blk with yellow	ant. 32 seg	blk.	blk. dorsally yellow ventrally	brown with yellow & blk.		
Ichneumonidae x	M26		4	blk [illegible]	[illegible] blk	blk.	brown	yellowish brown		
Chalcididae x	M24		3	blk w/ [illegible]	ant 12 seg. [illegible]			hind femora greatly enlarged blk & yellow		
Pteromalidae x	M27		3	met. blue	finely punc.	finely punctate	smooth, shiny	brownish-yellow		
Pteromalidae x	M28		[illegible]	[illegible]	[illegible]					

C.11.3.7-27b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Andrenidae X	M32		9	dk. brown, very hairy (yellow)						
Apidee (bumblebee X	M30		13	blk & orange, hairy	blk.	Orange dorsally	orange dorsally on 1st abdominal segment	blk		
ANDRENIDAE X	M 60			metallic blue						
Halictidae X	M29		6	met blue/ green and brown	slightly metallic, finely punctate	slightly metallic, finely punctate	brown	brown		
Halictidae	M31		5	met blue/ green and brown	metallic blue-green					similar to M29 but smaller more metallic
Braconidae X	M33		3.5	blk.	ant 16 seg.		blk. & brown	light brown		
Braconidae X	M36		3	blk.			light with [illegible] sclerites	blk.		
Ichneumonidae X	M37		14	red [illegible]				red orange		

C.11.3.7-28a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number North Pt Site C

Sampling technique Malaise

Species List Reference No. 83C M

Taxonomic Information HEMIP HOMOP

Identifier PEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
HEMIPTERA 8 Miridae ✕	83C M24		~2.0	pale; tint of grn						

C.11.3.7-2

[illegible]	Ref. No.	Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
HOMOPTERA Cicadellidae X	83C H25		7.0		Graphocephala ?					
Cicadellidae X 4	H26		2.5						orange & blue bands	

C.11.3.7-29a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number North PJ Site C

Sampling technique Malaise

Species List Reference No. 83CM

Taxonomic Information COLEOP, LEPIDOPT

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
COLEOPTERA Cleridae 12 X	83C M21		2.5	drk metallic	ant brn filiform			orange 5-5-5 clearly	3 drker transverse bands	
Chrysomelidae 4 X	M22		2.5	orange-brn	~~rd~~ round ant. long	small pro Flea Beetle		5-5-5 appearing 4-4-4		

C.11:3.7-29b

[illegible] REPORT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
unknown moth adult X	83C M 23		3-5	pale to brn						

C.11.3.7-30 a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

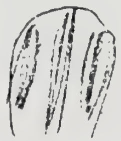
Site name and number North RT site C

Sampling technique Malaise

Species List Reference No. 83 C M

Taxonomic Information DIPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Asilidae X	83C M27		10.5							
Therevidae X	83C M28									
Chironomidae X	M29			1° lite						
Chironomidae X	M30			1° drk brn						

C.11.3.7-30

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Sciaridae X	83C M31		2.5- 3.0		brn	brn	brn orange			
Cecidomyiidae X	32		v							
Mycetophilidae X	33		v							

C. 11. 3. 7-31

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number North RT Site C

Sampling technique Malaise

Species List Reference No. 83 CM

Taxonomic Information DIPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Phoridae [illegible] X	83C M34		1.5	brn						
Trixoscelididae X	M35									
Chloropidae X	M36									
Lonchaeidae X	M37									

C.11.3.7-32a

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83
Site name and number North PJ Site C
Sampling technique Malaise

Species List Reference No. 83C M
Taxonomic Information HYMENOPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Apidae x	83C M1		13mm		blk & yllw hrs	orange haired all over	lrg w/ orange hairs			
Apidae x	M2		18 mm	blk 1°	white face	white haired				
Apidae x	M3		18	blk 1°	white hairs	white hairs				
Apidae x	M4	close to M2 83C	14		white hairs, white face	heavy white hairs		tarsi w/ yllw hrs		
Apidae x	M5		10		blk w/ yllw hairs	blk w/ yllw hrs	brn; back edges of sclerite w/ hairs			

C.11:37-32

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Andrenidae X	83C M6		13mm		yllw hairs	yllw hrs	yllw hairs	blk hairs		
Andrenidae X	M7		17		yllw hrs	yllw hairs	blk hrs	"		
Andrenidae X	M8		12 - 15		blk hd, yllw hrs	blk, yllw hrs	brn w/ blk dorsal transverse bars	femur blk rst orng brn		
Andrenidae X	M11		9,5		blue hrs white, gray, blk	blue, hairs long, white	blue		stigma - lite	
Halictidae x	M9		7-8		blk sparse lite hrs	blk, sprase, lite hrs	brown		stigma - lite 3 SM cells	
Halictidae x	M10		10		blk w/ white hrs	blk w/ white hrs	blk white short hr bands		3 sm cells	

C.11.3.7-33a

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REPORT

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

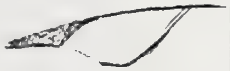
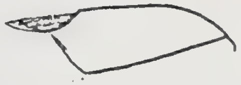
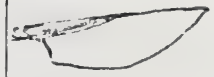
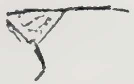
Species List Reference No. 83CM

Site name and number North PT Site C

Taxonomic Information HYMENOP

Sampling technique Malaise

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Ichneumonidae X	83C M12		16-18	orange						
Ichneumonidae X	83C M13		5.5-6.0		hd blk ant ~ 30 sg 3/4 bd lng	blk	blk	var		
Braconidae X	M14		3.0	rd to brn	22 sg 3/4 bd lng					
Braconidae X	M15		2.0-2.5		blk 1 bdy lng	blk	brn			
Braconidae X	M16		2.0		blk ~ bdy lng	blk	brn			

C.11.3.7-34

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

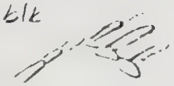
Site name and number North PJ Site C

Sampling technique Malaise

Species List Reference No. 83CM

Taxonomic Information Hymenop

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Pteromalidae X	83C H17		4.0		blk ant 9seg	blk	blk shiny	var yllw to blk	veins yllw	
Pteromalidae X	83C H18		2.0		blk ant - 9seg	blk	blk; shiny	blk	veins drk	
Eulophidae X	H19		1.5		drk met grn			lite yllw beyond femur	vien - brn	
Eulophidae X	H20		1.5		blk 	blk	blk shiny	drk		

C.11.3.7-35

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[illegible]

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE D

Sampling technique MALAISE TRAP

Species List Reference No. 83 D M

Taxonomic Information HEMIPTERA

Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
MIRIDAE	83 D M 22									

C.11.3.7-36

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO
Site name and number SITE D
Sampling technique MALAISE TRAP
Species List Reference No. 83 D M
Taxonomic Information HOMOPTERA, COLEOPTERA
Identifier D. BOSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
PSYLLIDAE X	83 D M 10		1.6	CREAM W/BRN MARKINGS						
CICCADELLIDAE X	83 D M 11		5.5	DK. BRN					WHITE VEINS	
CICCADELLIDAE X	83 D M 12		3.1	BRN	ORANGE MARKINGS ON HD				WHITE VEINS	
CICCADELLIDAE X	83 D M 22				ORANGE ON HEAD				ORANGE STRIPES DOWN WINGS	
CICCADELLIDAE X	83 D M 24		2.4	BRN		[illegible]				
DELPHACIDAE X	83 D M 25			CREAM						

C:11.3.7-3

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
COLEOPTERA CANTHARIDAE X	83D M13		6.4	BRN						
CLERIDAE X	83D M22		3.4	GRAY W/BRN SPOTS						
COCCINELLIDAE X	83L M26		5.4	CREAM W/BRN MARKINGS						
CHRYSOMELIDAE X	83D M27		3.0	CREAM W/BRN MARKING				ORANGE		

C.11.3.7-37

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number SITE D

Sampling technique MALAISE TRAP

Species List Reference No. 83 D M

Taxonomic Information LEPIDOPTERA

Identifier D. POSCHEN

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
LG MOTHS x	83 D M 14									
SM. MOTHS x	83 D M 15									
MOTH x	83 D M 16			DK BRN		[illegible]			BRN ON WINGS	

C.11.3.7-38

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number SITE D

Sampling technique MALAISE TRAP

Species List Reference No. 83 D M

Taxonomic Information DIPTERA

Identifier D. B[illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
SYRPHIDAE X	83 D m 1		9.7							
TACHINIDAE X	83 D m 2		11							
CHIRONOMIDAE X	83 D m 17			YELLOW						
CHIRONOMIDAE X	83 D m 18			[illegible]						
SCIARIDAE X	83 D m 19			BROWN [illegible]	BROWN	BROWN	ORANGE			
SCIARIDAE X	83 m [illegible]									

C.11:3.7-38b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
CECIDOMYIIDAE Y	83 D M 21									

C.11.3.7-39

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE D

Sampling technique MALAISE

Species List Reference No. 83 D M

Taxonomic Information HYMENOPTERA

Identifier D. [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ICHNEUMONIDAE x	83 D M 29			BLK				ORANGE	BLK.	
ICHNEUMONIDAE x	83 D M 30			BLK + ORANGE	BLK	BLK	ORANGE	TIPS OF LEGS ORANGE	BLK.	
ICHNEUMONIDAE X	83 D M 31			ORANGE					BLK.	

C.11:3.7-39

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
HALICTIDAE x	83 D M32		6.2	MET. GREEN/ BLUE						
ANDRENIDAE x	83 D M33									
HALICTIDAE x	83 D M34									

C.11.3.7-40a

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[illegible] REPORT

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO
Site name and number SITE D
Sampling technique MALAISE TRAP
Species List Reference No. 83 D M
Taxonomic Information HYMENOPTERA
Identifier D. Po[illegible]n

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
APIDAE X	83 D M 3		15.2	BRN W/GOLD HAIR ON HEAD + THORAX						
ICHNEUMONIDAE x	83 D M 4			ORANGE						
ICHNEUMONIDAE X	83 D M 5			CREAM W/TAN MARKINGS						
ICHNEUMONIDAE	83 D M 6			BLK				YELLOW + BRN		

C.11.3:7-40b

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
BRACONIDAE >	83D M7		2.9	BLK.						
EULOPHIDAE X	83D M8		2.1	MET. BLUE/ GREEN	BLU/GR	BLU/GR	BRN			
PTEROMALIDAE	83D M9		1.5	MET. BLUE/ GREEN	BLU/GR	BLU/GR	BRN			

C.11.3.7-41

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FEOSP PROGRESS REPORT

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 RIO BLANCO

Site name and number SITE 5

Sampling technique MALAISE TRAP

Species List Reference No. 83 5 M

Taxonomic Information HOMOPTERA

Identifier D. BOSCHERT

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
PSYLLIDAE X	83 5 M 10		1.8	LT. ORANGE						
PSYLLIDAE X	83 5 M 11		2.1	DK. BRN W/ELT MARKINGS						
CICADELLIDAE X	83 5 M 12		2.8	YELLOW	WHITE MARKINGS ON HEAD & PRONOTUM					

C.11.3.7-42

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TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco

Site name and number SITE 5

Sampling technique MALAISE TRAP

Species List Reference No. 83 5 M

Taxonomic Information LEPIDOPTERA, COLEOPTERA

Identifier D Boschen

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
MOTHS X	83 5 m 2									
COLEOP										
ELATERIDAE X	83 5 m 9		8.2	PK. BRN			STRIATED LONG.			
CLERIDAE X	83 5 M 13		3	GRAY W/BRN MARKS			PUBESCENT			

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

C.11.3.7-13

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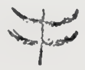
Project name and number 83 RIO BLANCO
Site name and number SITE 5
Sampling technique MALAISE TRAP
Species List Reference No. 83 5 M
Taxonomic Information DIPTERA
Identifier D. [illegible]

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
SÝRPHIDAE ✓ X	83 5 m 1									
Syrphidae ✓ X	M23						orange			
CHIRONOMIDAE	83 5 m 14		1.8	YELL		BRN [illegible] 				
CHIRONOMIDAE X	83 5 m 15		1.8-2.0	BRN						
CECIDOMYIIDAE	83 5 m 11									

C.11:3.7-413

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Sciaridae X	835 M17			GAN						
Simulidae X	835 M24									

C.11.3.7-

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[illegible] PROGRESS REPORT

TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number Rio Blanco 83

Site name and number Mixed brush Site 5

Sampling technique Malaise

Species List Reference No. 83 5 M

Taxonomic Information DIPTERA

Identifier BEK

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
Phoridae X	835 M25		5	brn						
Therevidae X	83 5 M26									
Lonchaeidae X	M27									
Trixoscelididae X	M28									

C.11:3.7-4/4

ily & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
Anthomyidae X	855 M29			grey 1°	orange area immed behind ant					
Anthomyidae X	M30				eyes nearly meet					
Calliphoridae X	M31			grey					R_3 cell narrowed	

C.11.3.7-45a

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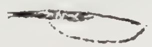
TERRESTRIAL INVERTEBRATE LAB SPECIES REFERENCE LIST

Project name and number 83 Rio Blanco
Site name and number SITE 5
Sampling technique MALAISE TRAP
Species List Reference No. 83 5 M
Taxonomic Information HYMENOPTERA
Identifier D Bosworth

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wings	Other
ANDRENIDAE X	83 5 M 3			DK. BRN W/WHITE HAIR	WHITE ON HEAD					
ICHNEUMONIDAE X	83 5 M 4		4.2	DK BRN				LT. BROWN		
ICHNEUMONIDAE X	83 5 M 5		5.9	DK BRN	24 seg [illegible]?			ORANGE		
ICHNEUMONIDAE X	83 5 M 6		4.6	DK. BRN	[illegible] ?			ORANGE		

C. 11.3.7.-456

Family & Species	Ref. No.	Alt. Ref. No.	Size (mm)	Color	Head	Thorax	Abdomen	Legs	Wing	Other
BRACONIDAE X	835 M7		3.7	DK. BRN				ORANGE		
BRACONIDAE X	835 M8		3.2	DK. BRN				BRN		
BRACONIDAE X	835 M20		1.9	BRN	DK. BRN	DK. BRN	LT. BRN.			
BRACONIDAE X	835 M21		1.8	BRN	DK BRN	DK BRN	LT. BRN			
XYELIDAE X	835 M18		2.8	YELLOW W/BRN MARKINGS	3rd ANT. SEG LONGER THAN REMAINDER				3 MARGINAL CELLS	
PTEROMALIDAE X	835 M19		1.8	MET. GREEN						
Bethylidae X	M22									

2.3.10 Domestic Livestock

2.3.10 Domestic Livestock

2.3.10.1 Introduction

Numbers of livestock on the study area are being determined and areas of concentration are being estimated on a seasonal basis to help define the extent and type of grazing pressure exerted by domestic herbivores.

2.3.10.2 Methods

2.3.10.2.1 Aerial Censuses

Aerial censuses are being used to determine the locations of domestic livestock within the area of investigation. The domestic livestock censuses are conducted bimonthly in conjunction with the large mammal aerial censuses. Since the censuses are conducted concurrently, the data gathering procedures are identical to those described for the large mammal aerial surveys. When livestock are sighted during the aerial censuses, location and number of individuals are recorded into cassette tape recorders.

2.3.10.3 Results

Aerial surveys of domestic livestock were conducted in conjunction with the large mammal aerial surveys on June 26 and August 18, 1975. During the June census, 752 cattle were observed. The majority of the cattle were located on 84 Mesa and in areas south and east of Tract C-a (Figure 2.3-17). In contrast to the livestock distribution noted during the June survey, most of the cattle observed during August were located west of Tract C-a in mountain brush areas. The screening effects of the heavy brush may have resulted in many cattle being overlooked during the surveys. Only 101 domestic livestock were observed during the August count.

2.3.10.4 Summary and Conclusions

Large numbers of cattle were observed during the two aerial surveys conducted this quarter. Most cattle were observed to the northeast and southeast of Tract C-a.

2.3.10.5--DOMESTIC LIVESTOCK RAW DATA

BIG GAME AERIAL CENSUS REPORT AND DATA SUMMARY FORM

Page 1 of 4

oj/Study 83/61 Date Flown 6/26/75 Species Livestock Dom Cattle Survey Area Rio Blanco Study Area

oservers: RF ELKling LR DVanHorn Pilot/Aircraft Lee Pauw / Cessna 206

art 0648 Finish 0921 [✓ Est.] indicated airspeed ~~Ground speed~~ & alt. 80 mph @ ~150' above ground

ng conditions: Ground cover poor/fair 1% snow. Light Excellent Air Excellent

eather: Temp. 35°/38°F Wind not noticeable Cloud cover 0/0 Analyst DVH and ELK

KDM 7/22

servations			Location sometimes age categories are on transcript why not on summary data sheet?	Notes and Comments	Transect
♀	JUV	U			
		7	head of S. VanHorn Gulley	Sagebrush	T1
		6	N. of T15	Sagebrush	T1
		34	Road be/ Ryan Corral	Sagebrush	T2
		2	Yellow creek - Bottom	pasture	2
		1	N. of Big Duck Creek	Sagebrush	3
		4	In Big Duck Creek	sagebrush	3
		7	S. of 84 ranch on road	road	4
		15	Bottom of Yellow Ck	waterhole	4
		11	S. of VH gulley E 1/3? KRDM	Sagebrush	4
		2	N of VH gulley 1000's N of Yellow Ck	Sagebrush Sagebrush	4 5
		3	Bttm of Yellow Ck	pasture	5
		14	Reigel Ranch - Ryan Gulch	Pasture sagebrush	5 6
		5	84 mesa S of VH gulley	sagebrush	5 6
		6	84 mesa N. of VH gulley	Sagebrush	7
		7	84 mesa S of VH gulley	sagebrush	7
		6	Wolf Ridge	P/J - sage	7
		3	Stake Springs bottom	Sage	8
		1	Pauw Gulch	Sage	8
		6	84 mesa Road	Road	8
		33	84 mesa, just off Road	Road - sage	8
		7	Duck Creek	Sage	9
		3	Stake Springs - road	Sage	9
		1	Ridge top N. of Ryan	Sage	9
		2	N. of Ryan on Ridge	sage	10
		2	84 mesa	sage	10
		3	84 mesa - before Road	sage	10
		6	84 mesa E. side of Road.	Sage	10

l Animals Counted: ~~749~~ 752 + 4 domestic horses.

al Distribution: 84 mesa and South east of tract C-a Page 1 of 4
Watering places, roads, gully bottoms

RBOSP PROGRESS RPT

BIG GAME AERIAL CENSUS REPORT AND DATA SUMMARY FORM Page 2 of 4

j/Study 83|61 Date Flown 06/24/75 Species Livestock Domestic Survey Area Rio Blanco Study Area

ervers: R L Pilot/Aircraft

rt Finish Est. ground speed & alt.

n ıg conditions: Ground cover Light Air

ther: Temp. Wind Cloud cover Analyst

ervations			Location	Notes and Comments	
♀	JUV	U			TRANSECT #
		4	N. of Ryan on Ridge Top	sage	11
		23	Ryan Gulch bottom	Pasture	12
		16	Hunk Ridge	sage P/J	13
		11	Left Fk. Stake Springs	sage	14
		3	Rt Fk. Stake Springs	sage	14
		6	Dead Eagle Ridge	sage	14
		8	Dead Eagle Ridge	sage	15
		2	Dead Eagle Ridge	sage	16
		3	Rees' Gulley bottom	sage	16
		6	S. of Clyde's Grave	Ridgetop - sage	18
		5	Corral Gulch bottom	pasture	6
		4	Bottom of Stake Spring	Pasture	12
		3	N. of Big Duck Creek	P-J	15
		6	Small gully into S. Van Horn Gully	—	1
		4	N of Ryan Gulch Fenceline	sage-P-J.	1
		2	½ way through Hunk Ridge 20 yds east		2
		3	~400 yds S of Yellow Creek in S Van Horn	-	
			gully	—	2
		52	N of rd from Ryan to 84 Ranch	sage	3
		15	on VH side, same area as above	sage	3
		3	road at end of transect		4
		4	84 WEST WATER TANK S of VH Gully		5
		→	(4 Consultant's horses in corral by 84 ranch)		5
		2	near 84 road	Creek bottom	8
		1	road Snake Springs Gulch		6
		4	trail N of Corral Gulch		6
		153			

1 Animals Counted:

al Distribution:

Page 2 OF 4

173

BIG GAME AERIAL CENSUS REPORT AND DATA SUMMARY FORM page 3 of 4

Proj/Study 83/4.1 Date Flown 06/26/75 Species Livestock Survey Area Rio Blanco Study A

Observers: R________ L________ Pilot/Aircraft________

Start________ Finish________ Est. ground speed & alt.________

Co ting conditions: Ground cover________ Light________ Air________

Weather: Temp.________ Wind________ Cloud cover________ Analyst________

bservations				Location	Notes and Comments	
♂	♀	JUV	U			Transect #
			10	Van Horn Gully	in gully bottom	6
			3	Duck Creek	Sage	7
			18	Water tank S of Van Horn Gully		7
			18	N of road on 84 mesa		7
			18			7
			13	S of road on 84 mesa		7
			4	bottom of Stake Springs		7
			8	Corral at Regal Road		7
			14	Along Gulch		8
			4	small gulch + road ½ mi from end		8
			10	84 mesa beginning of transect	Sage	9
			12	84 mesa road		9
			3	Along pipeline		9
			19	bottom of Stake Springs		9
			3	House Draw		9
			3	N of Ryan Gulch		9
			5	along Road Hunt Ridge		10
			2	top of Hunt Ridge		10
			3	bottom of Stake Springs		10
			11	road 84 mesa		10
			8	just b-4 break into Duck Creek		10
			32	Bottom of Stake Springs		11
			6	Road on Hunt Ridge		12
			3			12
			3	South of Stake Springs on ridge		12
			23	North of Pipeline		13
			1	beginning of transect N of Gulch		14
			sub 257			

al Animals Counted: 257

imal Distribution:

RBOSP PROGRESS REPORT

ECI

BIG GAME AERIAL CENSUS REPORT AND DATA SUMMARY FORM Page 4 of 4

Proj/Study 83/61 Date Flown 06/24/75 Species Livestock Survey Area Rio Blanco, Study 1

Observers: R ____ L ____ Pilot/Aircraft ____

Start ____ Finish ____ Est. ground speed & alt. ____

nting conditions: Ground cover ____ Light ____ Air ____

Weather: Temp. ____ Wind ____ Cloud cover ____ Analyst ____

bservations				Location	Notes and Comments	
♂	♀	YV	U			Transect #
			14	Left Fork Stake Spring	Sagebrush	14
			16	Right Fork Stake Spring		15
			3	S of " " " " [illegible]		15
			3	N of Cottonwood Spring		16
			3	East Fork Spring Creek		17
			12	Rd S of East Fork Spring Creek		17
			2	N of North Fork Big Duck Creek		17
			7	end of transect on hill		17
			13	start of transect		18
			12	pipeline		18
			6	S of Soap Gulch		18
			sub 130			

otal Animals Counted: ~~749~~ 752 xom + 4 domestic horses I

imal Distribution: 84 mesa and south end of Tract C-a watering places, roads, gully bottoms.

RBOSP PROGRESS REPORT
ECI

File No. 83 C.12.3.1
1 of 1

LARGE MAMMAL AERIAL CENSUS REPORT AND DATA SUMMARY FORM

Proj/Study 83/Wh Date Flown 18 Aug 75 Species Domestic Livestock Survey Area Rio Blanco [illegible]
Observers: R CLKling L R.P. Kennedy Pilot/Aircraft L.F. Rue / Cessna 206
Start 0718 Finish 0945 Ave. Indicated Air Speed 80 Est. Altitude 150'
Counting Conditions: Ground Cover -summer-poor Light Good Air Good
Weather: Temp. 60°/68° Wind Gusts 05/15 Cloud Cover 0 / 15% Analyst PK+CLK QA Check RMM 7/2/75

Observations ~~M~~ ~~F~~ Adult	JUV	U	Location	Notes and Comments
			T.2	New road cut up from Ryan to 84
2			T.14 S. of Corral Gulch	
2	1		T.17 Top of Dead Horse Ridge	
1	1		Sagebrush Hill	
13			Gully N of Airplane	
3			Top of Airplane Ridge	
1	1		N of Landing Strip Ridge	
		15	T.18 West Whorton Gulch	
12			T.19 Salt Lick ~ 1/4 way through	
5			T.19 South end of transect	
8			T.12 N.E corner of the tract	
2			T.13 Big Duck Creek	Lying down in the riverbed.
1			T.16 Spruce Gulch	
1			T.16 S. of Live Eagle Gully	
2			T.17 S. of ~~[illegible]~~ of Spruce Gulch	
1			T.17. S. of Airplane Ridge	P-J. habitat
4			T.18 inside S. boundary of the transect on the Cathedral Bluffs.	
3			T.18. ~~[illegible]~~ 1/2 myle North of North Fork, Big Duck Creek ~~the north end of transect~~	Grazing in mixed shrub habitat
	1		T.19 1 mile south of North end Transect	Running in mixed shrub habitat
9			T.19. S. of Big Duck Creek on ridgetop	Laying down in sagebrush habitat
3			T.19. Dead Pig Ridge	Grazing in an upland meadow
	1		T.19. N. of K-U Gulch	Grazing in sagebrush habitat
81	5.	15		

Total Animals Counted: 101

Animal Distribution: Most west of tract on high elevations.

2.3.11 Remote Sensing

2.3.11 Remote Sensing

2.3.11.1 Introduction

Several ongoing investigations to determine the applicability of remote sensing techniques for acquisition of terrestrial baseline data are included in the terrestrial baseline program. These include investigations of the distribution, areal extent and crown density status of the vegetation community types; erosion condition; distribution of wildlife habitat for large and small mammals; distribution of western harvester ant colonies; and locations of suspected habitat of major avifauna, including raptor species.

2.3.11.2 Methods

2.3.11.2.1 Imagery Procurement and Inspection

One flight to obtain color infrared (CIR) imagery at a scale of 1:6000 is conducted in September of 1975. Coverage at the 1:6000 scale will provide imagery of the entire 440 sq km (170 sq mi) study area.

The mapping flight is designed to provide imagery of sufficiently high quality to obtain the maximum amount of information available. A qualified subcontractor performs the flight.

All planned flights must meet several requirements established by ECI to insure a maximum amount of information and high quality results. Specifications require a 9" format aerial, metric camera (Zeiss RMK A 15/23, Wild Heerburgg RC-8 or equivalent); a high resolution, low distortion lens (focal length dependent upon application); 60% overlap and 30% sidelap for 1:6000; flying time between 1000 and 1400 hours MDT; Wrattan No. 12 filter; 0-10% cloud cover and Kodak color infrared type 2443 film (Avery, 1968; Moffitt, 1972).

To insure high quality results, ECI personnel inspect procured imagery when received from the aerial survey subcontractor. This is done by randomly selecting several successive images and visually checking them for proper scale, overlap and image quality (Avery, 1968). If this inspection shows inadequate imagery the aerial survey subcontractor is required to provide new imagery to meet the requirements established by ECI.

2.3.11.2.2 Laboratory Analysis and Verification

Analysis of CIR transparencies is conducted using a variable intensity light table with a mounted zoom stereoscope. Interpretations are made directly on the imagery using water soluble ink. Interpreted information is then transferred to 1:24000 mylar reproductions of USGS 7½ minute topographic quadrangles.

2.3.11.2.2.1 Vegetation Mapping

Vegetation types are identified on CIR imagery on the basis of texture, tone, topographic characteristics and size and shape (Avery, 1968) and by correlating data from vegetation transects with CIR imagery for the precise location of each transect. The transect data provide a basis for ground truthing CIR interpretations. An interpretation key is compiled, indicating the type of CIR imagery represented by each plant association. Anomalies are noted and ground truthed separately to verify interpretation. Each major vegetation type and any important associations within major vegetation types which can be accurately differentiated from CIR imagery are mapped. During interpretation, all roads and trails which are identified and not on USGS 7½ minute topographic maps are included to provide landmarks for ground checking.

Direct on-the-ground observations (ground truthing) are employed to establish the accuracy of image analyses (National Academy of Sciences, 1970). ECI staff members conducting ground truth missions are furnished with a map showing the interpretation boundaries and/or locations and and a description of the area and/or location is recorded and returned to ECI remote sensing personnel for reevaluation and correction.

After interpretation and required ground truth checks, details are transferred to black-line, topographic mylar reproductions and scaled to 1:24000. Transfer of detail to base maps is performed using a transfer instrument which aids removal of photographic errors due to tilt and scale differences resulting from variation in flying altitude. This allows improved correlation of vegetation associations with topographic relief.

Quantification of areal extent (vegetation cover) is performed utilizing planimetric measurements of vegetation types on the final map. A table is developed showing the acreage measurements of the major types prior to site development.

Crown density classes of the major wooded vegetation types are mapped, based on estimated crown density. Crown density is the proportion of the forest canopy occupied by trees and refers to all crowns in the stand regardless of canopy level. EStimates are ocular and stands are grouped into classes based on percentages (Avery, 1968). ECI investigations include the following crown density classes: 0-25%, 26-50%, 51-75%, 76-100%.

2.3.11.2.2.2 Vegetation Condition

Timing of the CIR flight in early fall is intended to obtain the best differentiation of vegetation types for mapping. Indications of vegetation condition, a secondary objective, may not be discernable due to normal losses of plant vigor at this time of year. To the extent that unusual losses in plant vigor are detected, they will be recorded.

2.3.11.2.2.3 Erosion Condition

Soil erosion rates are a function of soil type, plant cover, climate and topography. Human acceleration or deceleration of these rates is primarily a function of alteration of plant cover and topography. A correlation of plant cover, soil type and topography from CIR imagery and vegetation transect data is made to determine erosion condition for a given plant association. An erosion condition class (stable, slight, moderate, or severe) is then assigned to each plant association and the extent of that association on the vegetation map is used as a basis for determining the erosion condition by vegetation type for the study area.

2.3.11.2.2.4 Wildlife Habitats

Because the distribution of most wildlife is directly related to the distribution of vegetation and water, much of the vegetation information discussed previously is used to delineate the distribution of wildlife habitats. Information on distribution of species gained from a diversity of census techniques is used as the basis for maps which depict the relative habitat availability for important large and small mammals. This is done by keying wildlife species to identifiable vegetation types.

The 1:6000 imagery is analyzed for areas of major avifauna habitat including that of raptorial species. Rock outcrops, cliffs and noted specific nesting activity are mapped on 1:24000 USGS base maps. This information is placed on maps and made available to ECI avifauna investigators.

Western harvester ant colonies are also mapped on USGS 1:24000 quadrangles. Density is determined by overlaying a 1 ha (2.47 A) grid scaled to the 1:6000 imagery and counting colonies. Ground checking requires site visits to a few suspected ant colonies for visual verification.

2.3.11.3 Results

Remote sensing data were not gathered during the reporting quarter June through August, 1975.

2.3.12 Threatened and Endangered Species

2.3.12 Threatened and Endangered Species

2.3.12.1 Introduction

Federal and State wildlife agencies have compiled lists of species which may be considered "threatened", "rare" or "endangered". If any of these species are present in the study area they will be identified and their location and reliance on local habitats determined.

2.3.12.2 Methods

2.3.12.2.1 General Investigations

Throughout earlier sections of this and previous Progress Reports, specific quantitative and qualitative sampling techniques have been described which are to be performed within all major vegetation associations in the tract vicinity to inventory and enumerate the species of plants and animals present. Cumulatively these techniques should ascertain the presence of threatened, rare or endangered species. Once discovered, special efforts may be directed at determining the distribution and habitat utilization of the species on and near Tract C-a. The greater sandhill crane, endangered as a nesting species in the state of Colorado, has been observed on 84 Mesa north of Tract C-a and has therefore been subjected to this closer scrutiny.

2.3.12.2.2 Greater Sandhill Crane Surveys

2.3.12.2.2.1 Introduction

The greater sandhill crane breeds locally from southern British Columbia east to southern Manitoba and probably in southwestern Ontario south to northeastern California, northern Nevada, Utah, Wyoming, Minnesota, Wisconsin, and Michigan (Marshall, 1969). The sub-species is also known to nest in isolated areas of Colorado (Bailey and Niedrach, 1965), where recently its breeding status has become more clearly understood (Blake, 1974). During 1968 the United States Bureau of Sport Fisheries and Wildlife estimated the greater sandhill crane national population to be about 6,000. Littlefield and Ryder (1968) estimated the same population to be from 10,000 to 15,000 individuals. There is evidence that populations of this subspecies are showing marked increases in certain portions of the breeding range (Littlefield and Ryder, 1968). These notable population increases probably resulted in the greater sandhill crane's being removed from the list of nationally threatened wildlife species published by the USDI Bureau of Sport Fisheries and Wildlife (1973).

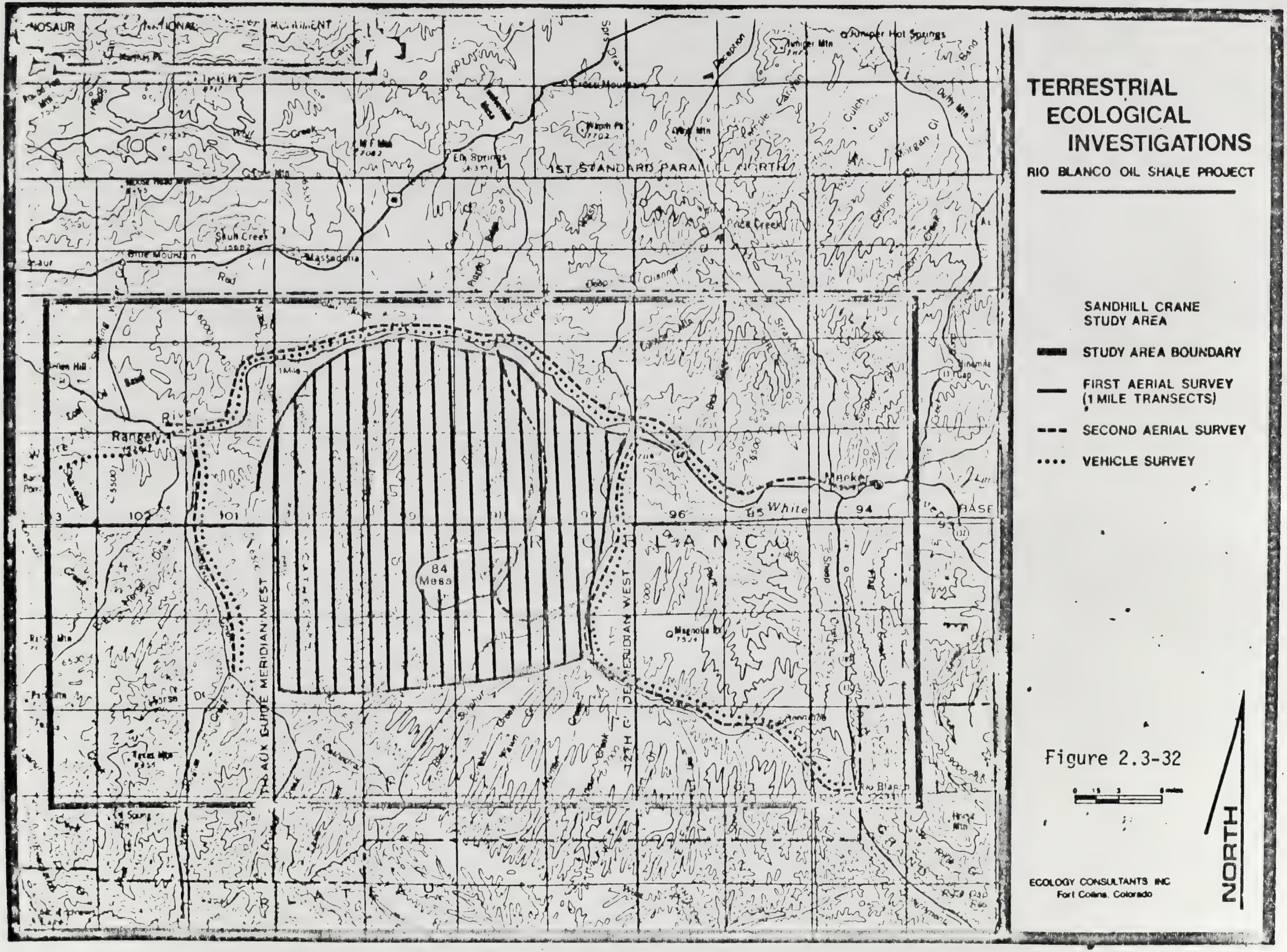
Dancing activities of the greater sandhill crane take place regardless of the number of birds present and regardless of age, sex, season, place, or time of day (Walkinshaw, 1949). However, dancing is most common prior to the nesting period, when the flock gathers on a particular dancing ground, to which cranes tend to return each spring (Blake, 1974). Although the function of dancing is not entirely understood, it probably functions as a courtship display, strengthening the pair bond (Blake, 1974). The importance of staging grounds in the cranes' breeding cycle as well as the difficulties involved in utilizing new staging areas if traditional ones are made unacceptable are not known. Farner and King (1973) state that after birds have entered the phase of overt reproductive activity, certain behavioral activities that assist the process of breeding become manifest. Dancing is one such behavioral activity that may lead to egg laying and brood production.

Between April 17-30, 1975, up to 30 greater sandhill cranes were observed displaying and foraging on 84 Mesa northeast of oil shale Tract C-a. The use of 84 Mesa and contiguous areas by greater sandhill cranes had not been reported prior to these April observations. Greater sandhill cranes nesting in northwestern Colorado concentrate their spring staging activities near Hayden and disperse to nesting areas approximately 25 miles away. Thus, it was initially considered that the greater sandhill cranes utilizing 84 Mesa for staging might nest in suitable areas in and around the mesa or continue north into Idaho, Wyoming, or Montana. The objective of the survey, therefore, was to determine if greater sandhill cranes are nesting in portions of the Piceance Basin.

2.3.12.2.2.2 Field Investigations

The study site was located in Rio Blanco Coungy and consisted of the following areas: (1) 84 Mesa and the adjacent valley of Duck Creek; (2) Piceance Creek valley from Rio Blanco to the White River; (3) Douglas Creek valley from the confluence of its two main forks to the White River; and (4) the White River valley from 10 miles east of Rio Blanco Lake to 10 miles west of Douglas Creek (Figure 23.-32).

Sagebrush (Artemisia tridentata) is the dominant plant species on 84 Mesa and its immediate vicinity. Scattered patches of pinyon (Pinus edulis) and juniper (Juniperus osteosperma) are also present. The scrub communities in the vicinity of Piceance Creek consist primarily of sagebrush, greasewood (Sarcobatus vermiculatus), and shadscale (Atriplex confertifolia). The upper end of Piceance Creek from Rio Blanco to Little Hills Experiment Station, consists of agricultural land, and there is a gradation into pinyon-juniper and scattered Douglas fir (Pseudotsuga menziesii). Both Piceance Creek and Douglas Creek lack typical woody riparian vegetation, such as


SANDHILL CRANE STUDY AREA
STUDY AREA BOUNDARY
FIRST AERIAL SURVEY (1 MILE TRANSECTS)
SECOND AERIAL SURVEY
VEHICLE SURVEY
NORTH
1ST STANDARD PARALLEL NORTH
127TH GUIDE MERIDIAN WEST
THAUX GUIDE MERIDIAN WEST
Rangely
Meeker
84 Mesa
Magnolia
Elk Springs
Massadona
Skull Creek
Juniper Hot Springs
Juniper Mtn
White River
Rio Blanco
Piceance Creek
Yellow Creek
Strawberry
Douglas
RIO BLANCO
PLATEAU
96
94
101
102
BASE

TERRESTRIAL ECOLOGICAL INVESTIGATIONS

RIO BLANCO OIL SHALE PROJECT

Figure 2.3-32

ECOLOGY CONSULTANTS INC
Fort Collins, Colorado

willows (Salix spp.) and cottonwoods (Populus spp.). The shrub communities present in the Douglas Creek area are similar to those in the Piceance region. Much of the land along the White River is currently utilized for agricultural purposes, but scattered groves of cottonwoods and willows are also found in some areas along the river. Small peninsulas and islands harboring cattails (Typha latifolia) and rushes (Juncus spp.) are common along the portion of the White River which was surveyed.

An initial aerial survey was conducted on June 6, 1975 to systematically map potential greater sandhill crane nesting areas; these potential areas were more closely scrutinized from the ground. Transects spaced at one-mile intervals were flown at an indicated air speed of 90-100 mph and at an altitude of 200-250 feet above ground level. The areas traversed by air are shown in Figure 2.3-32.

Following the initial aerial survey, a thorough ground survey of 84 Mesa and the adjacent Duck Creek drainage was conducted between June 11-16. All locations of greater sandhill cranes sighted in earlier work were checked. Since free water is essential to cranes for nesting habitat (Walkinshaw, 1965), valleys were explored for water at one-mile intervals or wherever rough-winged swallows, which are common near water, were observed foraging above the valleys. When water was present, the length of the drainage was examined for cranes and/or their footprints (Figure 2.3-33).

A ground survey of the remaining potential nesting habitats was completed between June 26 and July 4. The areas examined are indicated on Figure 2.3-32. The vehicle was stopped approximately every 0.3 mile, and the area was thoroughly scanned with 7 x 35 binoculars and/or a spotting scope. Areas that were inaccessible by truck or that afforded particularly good crane habitat were traversed on foot. Littlefield and Ryder (1968) described good greater sandhill crane breeding habitats as tracts having minimal disturbances, a feeding meadow, nesting cover and nearby water. These criteria were used in designating greater sandhill crane breeding habitat in this study.

On June 30 at 0640 a final aerial survey was conducted to reexamine potential nesting sites for greater sandhill cranes and to determine where further ground survey efforts should be concentrated. Indicated air speed ranged from 80-90 mph at an altitude of 150-175 feet above ground. Air and light conditions were excellent, providing for good visibility. The portion of the White River within the study area was flown three times because it contained the best potential nesting habitat. Douglas Creek was flown twice and Piceance Creek and Yellow Creek once. The confluences of the major tributaries to the above stream courses were also recanvassed for location of possible nesting sites. The areas flown during the June 30th survey are indicated in Figure 2.3-32.

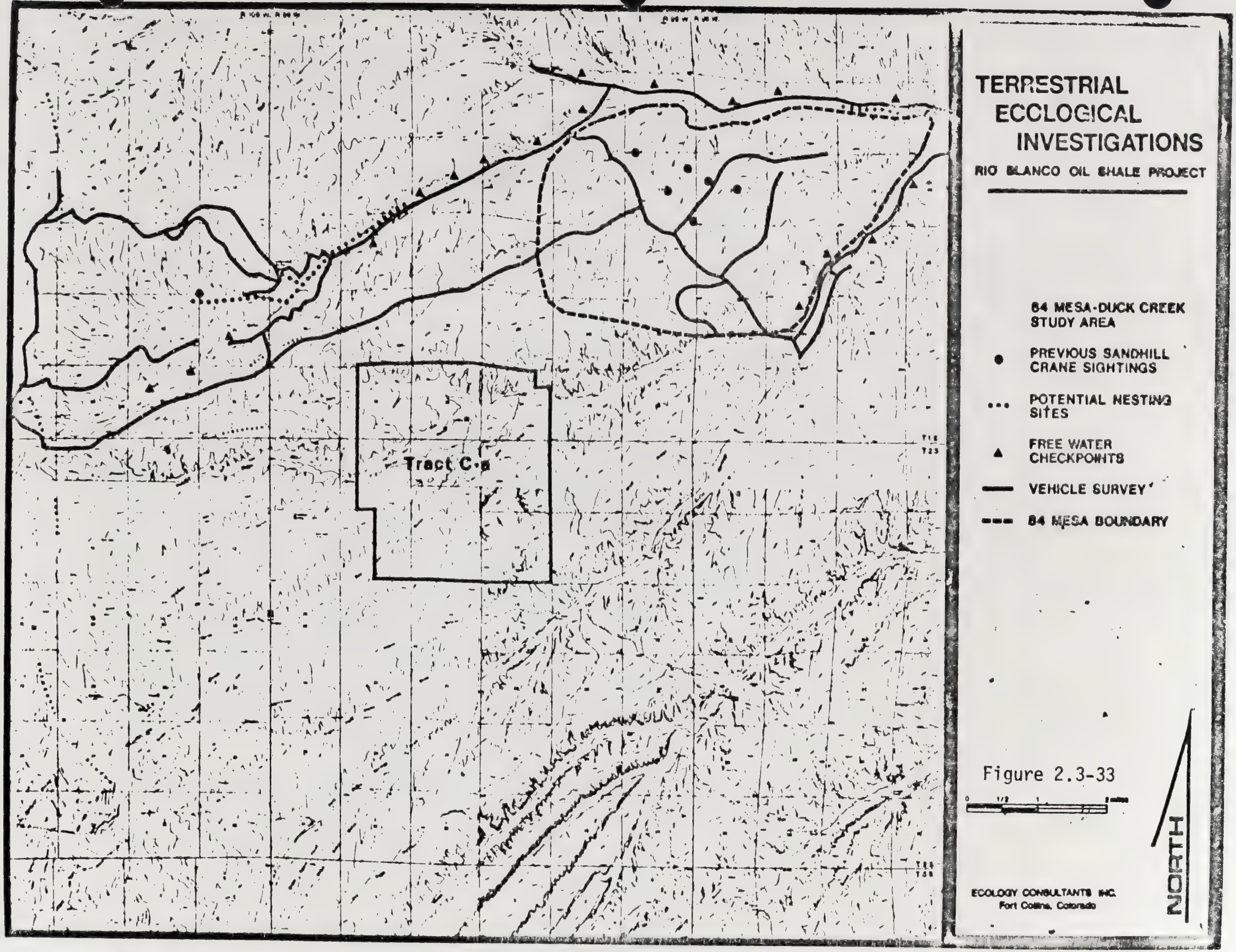

TERRESTRIAL
ECOLOGICAL
INVESTIGATIONS
RIO BLANCO OIL SHALE PROJECT
84 MESA-DUCK CREEK STUDY AREA
● PREVIOUS SANDHILL CRANE SIGHTINGS
... POTENTIAL NESTING SITES
▲ FREE WATER CHECKPOINTS
VEHICLE SURVEY
84 MESA BOUNDARY
Tract C-a
0
1/2
1
2 miles
NORTH
ECOLOGY CONSULTANTS INC.
Fort Collins, Colorado

Figure 2.3-33

During the two ground surveys, residents of the study area were interviewed to determine whether they had observed cranes in the area. The interviewees were asked if they had seen any large birds in the area and if so, to describe the birds. It was determined by inquiry whether the residents were possibly confusing greater sandhill cranes with great blue herons (Ardea herodias), the only other bird in the study area of comparable general appearance. Residents not initially familiar with the greater sandhill crane or that did not describe it properly were shown several photographs of the bird to determine if they then recognized it. Residents that were familiar with greater sandhill cranes were also shown pictures.

2.3.12.3 Results

2.3.12.3.1 General Investigations

Three animal species, the threatened prairie falcon (USDI, 1973), the endangered peregrine falcon (USDI, 1974) and the status-undetermined greater sandhill crane (Colorado Wildlife Commission, 1973) and one plant species, an endangered and threatened milkvetch (Astragalus lutosus, Smithsonian Institution, 1975), have been observed in the study area to date.

During the reporting quarter June-August, 1975, three adult prairie falcon observations were made, two on the Cathedral Bluffs, in June and one in Stake Springs Draw, in July. Three observations of peregrine falcons were recorded, one each in June, July and August, two in the Corral Gulch drainage and one on Wolf Ridge.

Because of their high mobility, it is not feasible to say exactly how many different individuals of each species were observed. Also the high mobility of these species and the low number of observations preclude the designation of habitat preference for either species.

No nests were observed for either species in the study area.

2.3.12.3.2 Greater Sandhill Crane Surveys

No greater sandhill cranes were observed in any of the areas examined by air or on the ground. The White River valley with its willow swamps and nearby grainfields provided the best potential breeding habitat. Two other potentially appropriate nesting areas were located on Duck Creek and Big Duck Creek (Figure 2.3-33). Both areas provide year-round water. Cottonwoods are located at the potentially suitable breeding site near Big Duck Creek while dense aquatic vegetation and insects are prevalent at the site on Duck Creek. After air and ground survey, many of the smaller creeks were ruled out as providing suitable nesting sites because they did not meet one or more of the requirements for suitable nesting sites as itemized in the methods section.

Conversations with area residents provided no evidence that greater sandhill cranes are nesting in the vicinity of 84 Mesa or elsewhere in the Piceance Basin, however an employee of Ecology Consultants, Inc. reported observing a single greater sandhill crane flying near the junction of Piceance Road and the White River on June 26, 1975. Many residents described the great blue heron as a recurring visitor in their locality and did not recognize the photographs shown to them of greater sandhill cranes. Several residents reported that although they were familiar with the greater sandhill crane, they had not observed any in the vicinity. Some residents along the White River described seeing a few to many cranes land in their fields or along the river during past migration periods, but these birds never remained for extended periods. One rancher on Piceance Creek reported that several cranes foraged along the creek during the high winds and rainy period of April, 1975. It appears that cranes have visited the White River and Piceance Creek in past years, but no resident knows of any having actually nested in the survey area.

At this time, it is not known if the cranes observed staging on 84 Mesa are Colorado nesters. As previously stated, the results of aerial and ground reconnaissance combined with personal interview data provided no evidence that greater sandhill cranes are currently nesting in the areas in and around 84 Mesa. But, according to Blake (1974), when the young are a couple of days old the adult birds lead them to higher ground or into the sagebrush to feed. Thus, the second portion of the ground survey may have occurred when adults had already led their young to feeding areas away from the water. Aerial and vehicle search for cranes may miss birds during the incubation period, due to the wariness of the birds and their ability fo blend with the surrounding environment (Walter Graul, personal communication). Therefore, it is possible that the greater sandhill cranes observed staging in April 1975 are Colorado nesters even though they were not detected during the study. They may be a local Rocky Mountain breeding flock that has gone unnoticed over the past years, or because pioneering local birds seem to be moving into habitats which were historically occupied (Blake, 1974), a recent population may possibly have reinhabited the area.

Greater sandhill cranes may use 84 Mesa during spring and fall flocking, foraging, and staging, yet move onto breeding and nesting grounds well removed from 84 Mesa. Bailey and Niedrach (1965) consider cranes to be regular migrants in the western counties of Colorado, and according to personal communications with Colorado Division of Wildlife personnel cited in Drewien and Bizeau's (1974) "Status and distribution of greater sandhill cranes in the Rocky Mountains," cranes are observed annually in spring and fall passing over the Grand Junction area, and small numbers occur occasionally on the White River and Piceance Creek in Rio Blanco County. Reports from several residents on the White River and Piceance Creek concerning occasional sightings of cranes during past migration periods also suggest that portions of the basin may serve as foraging sites for transient cranes. It is undetermined if the observed greater sandhill cranes use these sites year after year or on an occasional basis.

Greater sandhill cranes do not breed until they are 2 to 4 years old. The non-breeding adults congregate during the summer into flocks of non-breeding birds, which may have habitual feeding areas but tend to roam (Walkinshaw, 1950). Conceivably the flock of cranes observed in April could have been such a non-breeding flock.

The area in and around 84 Mesa is being observed from horseback and on foot beginning in mid-August and continuing into September 1975 for fall staging and flocking of greater sandhill cranes. Drewien and Bizeau (1974) observed that marked cranes at staging areas in southeast Idaho during fall 1970 generally moved to the major staging areas nearest their summering site.

2.3.12.4 Summary and Conclusions

During the reporting quarter June-August 1975, three animal and one plant threatened, endangered or status-undetermined species were observed. Three individual observations each were recorded for the prairie falcon and the peregrine falcon, although no nests for either species were encountered. An Astragalus lutosus was located in the Big Duck Creek drainage near Cottonwood Spring. A special study was conducted to investigate the status of greater sandhill cranes in the study area.

The extent to which greater sandhill cranes (Grus canadensis tabida) utilize 84 Mesa and other locations within a radius of 20 miles of 84 Mesa was investigated between April and July 1975. Ground and aerial surveys as well as personal interviews with residents of the Piceance Basin revealed no evidence that these areas are currently used by this species for nesting. However, based on observations made during April 1975, 84 Mesa may serve as a staging and foraging area for greater sandhill cranes during their spring migrations; suitable habitats adjacent to the mesa may serve as foraging sites. It is unknown if birds staging in this area of the Piceance Basin eventually nest in Colorado or if they continue migration to breeding areas farther north.

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